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VETERINARY MEDICINE

MONADNOCK BLOCK
Chicago

Why Not Try Boosting?
By L. A. MERILLAT

Problems of Heredity
By D. M. CAMPBELL

Queries and Answers—Symptom Analysis
By E. L. QUITMAN

Tuberculosis Eradication Work
By J. A. KIERNAN

Products Derived from the Animal Body
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Veterinary Medicine

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Editorial Comment

Why Not Try Boosting?

WHILE it may have been well known to students of national traits, for a long time, it was only during the late war, especially in the A. E. F., that it became apparent to even the casual observer that the American is by habit a kicker. Violent objections to every little thing that did not just please the fancy was a precious prerogative of the soldier. He kicked hard and often, in fact almost continually, displaying the habit we all, though unconsciously, have. To those not taking this national characteristic into consideration, everything seemed to be going straight to the dogs and forthwith. The "High Command," however, looked on with a knowing smile, satisfied that these outbursts were expressive neither of a profound discontent nor of a disloyalty to the command or country. It was to them simply a display of a national habit, and although done on a large scale and during a game where the stakes were high, no great harm was feared. It seemed to be known that behind this superficial fault was the desired determination to serve and to win. Whatever actual harm was done by kicking cannot be told, but it is a safe prediction that if the same amount of energy had been devoted to boosting, matters would have gone smoother.

How does this apply to us? Let us see. Except among those in well paid official positions it is a fact that today veterinarians are doing a great deal of kicking. Judging from conversations heard at recent meetings of veterinary associations, there seems to be a manifest anxiety about the future of the veterinary profession and with it a tendency to fix the blame upon all sorts of imaginary evils. Some see us in a period of readjustment that threatens to land us at a lower level than we have heretofore occupied. Some are certain that we are about to be supplanted by an imaginary supercreature too lofty to serve the purpose which, forsooth, maintains our numerical strength. Some predict an epoch of charlatanism and general chaos due to a dearth of legal practitioners. Some fear the intrusion of a quasi-animal physician produced in the animal husbandry courses of the agricultural colleges foreshadowed by the zealous county agent who oversteps the sphere created for him or who does not exactly understand the real duties of his office. And then we have as usual with us the chronic

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8. HELP AND SHARE WITH OTHERS—The real test of business greatness lies in giving opportunity to others.

9. BE DEMOCRATIC—Unless you *feel* right toward your fellow men you can never be a successful leader of men.

10. IN ALL THINGS DO YOUR BEST—The man who has done his best has done everything. The man who has done less than his best has done nothing.

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pessimist who has always predicted about everything bane, from total disaster to oblivion. From these presents it would seem, at least to an outsider, that we are surely drifting to the rocks. This is, however, not our destiny. The unrest is only on the surface and is due to working overtime at our national habit of kicking.

The observer in proper perspective will find at this moment ample evidence of a much brighter future than these unwarranted predictions indicate. A brighter future is assured by the ever increasing value of live stock, by the elimination of the scrubs and the improved purity of breeds. These tendencies are spreading with a surprising rapidity and it is broadening our realm very fast. Even the farmer operating on the smallest scale is falling into the spirit of the pure-bred sire campaign and those who have already reformed in this connection, although never before good clients of the veterinarian, are now calling for the skillful treatment and helpful advice he can give. Breeding of nondescript horses is a passing enterprise. We are on the verge of breeding just enough of the right kind to bring up the value to the cost of production.

The farm tractor, except as an auxilliary power, has had its day. At the present cost of the tractor itself, the fuel, oil and repairs, they will bankrupt any small farmer who is too stubborn to admit the truth. Farm incomes will support motor power that grows into value or at least depreciates slowly (as horses do), but they will never permenently support purely mechanical power, for the simple season that farm incomes are too small. Besides cities will always need a certain number of horses to do work that can not be done with profit by mechanical power. Hogs, sheep and fowl which heretofore could only be reckoned in flock value as a veterinary asset now have individual values that attract professional advice and treatment. Farmers more and more are seeking advice of properly qualified veterinarians on the matter of rations for particulars needs and they are turning to the veterinarian to castrate their pigs, lambs, calves and cockerels. The intensive feeding of milk-cows to bring up the milk production is causing a host of digestive troubles that are bringing lots of work to the practitioner. Then there is the ever increasing enactment of sanitary laws that will always afford the honest veterinarian an added income. To all of this we might append the inevitable trend of food inspection which now falls to the veterinarian almost unchallenged wherever such inspection is installed. In fact the brightest kind of prospects confront us of sufficient import to expose and emphasize.

So why not boost? Why not look at the good roads ahead and forget that we have any troubles worth worrying about.—L. A. M.

Problems of Heredity.

Many photographs of monstrosities, two-headed calves, six-legged pigs, one-eyed colts, and freaks of unending variety, are sent us by readers of VETERINARY MEDICINE.

Generally these illustrations are accompanied by a brief history of the case, and because they are unusual they are of interest, although less can be learned from a photograph of a monstrosity than almost any other kind of photographs we receive; a photograph of an operation, of an ailing animal, of hospital equipment and many other things that a veterinarian might photograph are ordinarily more instructive.

Occasionally a contributor in sending us a photograph of a monstrosity endeavors to give a probable explanation for the freak on the ground of maternal impression. Such veterinarians should be better informed in the science of genetics.

Doubtless many farmers are satisfied with the explanation that a more or less fancied resemblance that a certain monstrosity bears to a rabbit was due to hunters shooting rabbits in the presence of the mother several months previously; or that the seeming canine appearance of the head of a monster calf was due to the cow bearing it being frightened by a strange dog; but such explanations should not be credited or countenanced by veterinarians, who must be scientific men to measure up to their calling, and must know that after the sperm and egg cells unite and form the cell that develops into a new animal the mother merely protects and nourishes the developing fetus, and there is no mechanism for transmitting mental impressions of the mother to the fetus and no possibility of her causing the fetus to develop anything not already determined by its inheritance.

We do not know what causes monstrosities nor any means of preventing them. We *do* know that maternal impressions do not cause them and cannot cause them, nor can maternal impressions occasion the so-called birthmarks. These also, like anomalies in development of greater importance, are due to inheritance.

The classic tale of how Laban was done out

of the major portion of the increase in his herds by his wily son-in-law is often cited as proof of what maternal impressions may do. The scientific man will see a different explanation than peeled willow at the drinking pools to account for the markings of the offspring of Laban's cattle and conclude that while Laban was more skilled than Jacob in handling marriageable women and literally as well as figuratively put one over on him, the latter was more skilled in animal husbandry than his crafty father-in-law.

And then there is the oft-cited case of McCombie of Tillyfour, which is used to bolster the theory of maternal impressions. McCombie was one of the early breeders of Angus cattle. He painted his barns and fences black that his calves might be "black and all black"; for then as now an occasional red Angus calf appeared. In fact, since selection in this breed had been carried on for a far briefer period then than it has at the present time, red Angus calves were more common then than now, and all breeders were striving to avoid them. We must credit McCombie's success in breeding black calves to his skill in selection, but it is not recorded that the story of the black barns and fences did other than increase the popularity and enhance the sale of animals bred by the crafty Scot.

Obviously, if the color of the barns could affect the offspring of this breed, the red barns of, say, Iowa would have played havoc with steadfast black that is so all but universal in this breed at the present time.

A Hereford bull bred to scrub cows or Hereford cows bred to a scrub bull will result in white-faced calves somewhat oftener than nine times out of ten. Or if the pure-bred parent be an Angus or a Galloway, the black color will predominate in the offspring to the same degree, approximately. Or if one of the parents is of the pure-bred polled breeds, the hornless progeny will be about nine times as numerous as the horned.

It is possible that a present-day Jacob, possessing this information, might conceivably strike a bargain as profitable with a modern Laban: might bargain for the white-faced portion of the calves from cows bred to a Hereford bull, for instance. If he sought to attribute his good fortune to maternal impressions of any nature, he would have few believers.

Fallacies of Telogeny.

The belief in telogeny often brings a veterinarian's clients to him for advice. The belief that one mating may affect the offspring of subsequent matings is widespread among breeders, and particularly so among dog fanciers. It was once held by so great an authority as Darwin. However, the theory of telogeny has been fully disproved. No veterinarian should hesitate to assure breeders in the most positive manner that mating to a scrub sire will have no effect on subsequent matings, and the fact that a bitch has accidentally or through carelessness been served by a cur should not prejudice that owner or others against future progeny of the female by other sires.—D. M. C.

Iowa Has Its Dorsey.

James Dorsey of Illinois who was recently pardoned by the President after serving about two years of an 8-year sentence for using the mails in selling tuberculous cattle, resulting in the setting up of foci of tuberculosis among cattle in nearly thirty states, according to all reports, has his counterpart in the state of Iowa in W. B. Barney of W. B. Barney & Co. of Hampton, Ia., who, according to *The Evening Gazette,* published at Cedar Rapids under date of Jan. 8, 1921, is engaged in the same nefarious business.

Even worse than Dorsey, Barney, as head of the Iowa Dairy and Food Commission, is supposed to safeguard against just such offenses as he is alleged to have committed. In addition to his position as a dairy and food commissioner, he is a member and director of the Holstein-Friesian association and is said to have used his influence in the latter in an effort to cover up such sales.

He is charged with the sale of a number of tuberculous cattle but specifically, with selling a Holstein cow and two heifers to Elmer M. Reeves of Waverly, Iowa, representing them to be free from tuberculosis, healthy and pure-bred stock.

Later it was shown that all three animals were tuberculous, and from drinking the milk from the cow, the four-year-old daughter of Mr. Reeves contracted tuberculosis and has remained an invalid up to this time—she now being sixteen years old.

Barney, apparently by virtue of his political affiliations, was able to postpone the testing of his herd for a period of over nine years from the time the complaint was first registered and a test of the herd demanded by Mr. Reeves. However, at the present time, due to the recent inauguration of the Hon. N. E. Kendall as governor of

Iowa, it seems likely that some punishment will be meted out to Barney in the form of dismissal from office—his term does not expire for some considerable time.

Surely if the man is guilty as charged, dismissal from office is a totally inadequate punishment and he and others of his ilk should suffer long years of imprisonment; in fact, hanging is what they deserve, for as we see it they cause slow, tortuous death to the victims and agony to the afflicted one's relatives and thus are immeasurably worse than the murderer who kills his victim quickly.

Illinois Veterinarians Are "Issers."

Yes, doctors, the veterinarians of the **state** of Illinois are "issers" not "wassers" nor "going-to-bes," but "they are *it*." Again they are leading off nobly in a pioneer work, just as Illinois was the first to start "accredited herd" work, which idea first emanated from the brain of Dr. O. E. Dyson, former state veterinarian, it now leads in a new step which cannot help but promulgate the advancement of the veterinary profession in Illinois and revert to the individual benefit of every graduate veterinarian in the state.

We do not know at this time, much as we regret it, in just whose massive and foreseeing brain the idea that we are about to unfold first originated, but whoever he is, he should and shall receive the credit due him.

But we do know that it was such indefatigable workers as Doctors W. Lester Hollister, W. H. Welch and Geo. Gordon, who by their untiring efforts started the ball rolling with such momentum that it could not be stopped. It was they and their colleagues who gave the formation of county veterinary organizations such an impetus that by the middle of November fifteen counties had been organized and it was this, together with our own experience, that prompted our editorial on "Community Veterinary Associations" in the December, 1920, issue of VETERINARY MEDICINE.

These workers formed a "Committe on Veterinary Welfare" and evolved the plan to make the movement official by having it adopted by the Illinois State Veterinary Medical Association, which was accomplished at the meeting Dec. 2 and 3, 1920. They also, at the inception of their plan, evolved a scheme to finance the work, as it takes money to make the mare go, and several months before the date of the state meeting they had sent out pledge cards for funds to every legally qualified graduate veterinarian in the state; and were these pledges made by the veterinarians? We'll say they were. The way the signed pledges and checks are continuing to arrive, indicate that in a short while there will be only two classes of veterinarians in Illinois—those who did and the two or three who did not.

The ultimate idea and object of the plan was to employ a full time "Field Secretary", a man of ability who would devote his entire time to the work—one who knew the troubles and the needs of the profession.

As the plan was unfolded and adopted at the meeting of the Illinois State Veterinary Medical Association, in Chicago, Dec. 2 and 3, 1920, it was decided in order to organize the veterinarians by counties to divide the state into seven districts, each district to elect a representative—these seven representatives to constitute an executive committee on "Field Work". This committee was duly elected by the veterinarians of each district and comprises the following:

District No. 1—E. L. Quitman, chairman, Chicago; 2. Roy E. Kluck, Forreston; 3. W. F. Brownlee, Kirkwood; 4. W. H. Welch, Lexington; 5. C. C. Hastings, Williamsville; 6. T. J. Foster, Monticello; 7. Robt. Rives, East St. Louis.

The committe immediately organized itself and employed Dr. J. I. Gibson, who needs no introduction to the veterinary public, to serve as its "Field Secretary", and it is his duty to iron out the trials, troubles and tribulations of the veterinarians of Illinois, to further their interest in every conceivable manner by continuing the collection of funds, organizing the remaining unorganized counties, meeting and discussing with the various farmers, breeders and agricultural organizations such problems as are of mutual interest to them and to veterinarians, to promote the employment of veterinarians in their professional sphere, to act as an arbitrator, to increase friendship among veterinarians, to stop "backbiting," fee cutting, etc, etc., in fact, he is to be the good samaritan of the profession and we believe we have the right man in the right place for the right job and that we are on the right track to further the interests and raise the standard of the veterinary profession in Illinois. —E. L. Q.

The wisest man may be wiser today than he was yesterday, and tomorrow than today. Total freedom from change would imply total freedom from error; but this is the prerogative of Omniscience alone.—Colton.

Progress of Co-operative Tuberculosis Eradication Work

By Dr. J. A. KIERNAN, Washington, D. C.
Chief of Tuberculosis Eradication Division, B. A. I.

THIS is the third anniversary of the inauguration of co-operative tuberculosis-eradication work. It would be a grievous error to discuss this subject without associating with it the United States Live Stock Sanitary Association. Through this body, which has for more than twenty years espoused various campaigns for the extirpation of live stock diseases, which means the conservation and preservation of our great American industry, the first official action was taken in the inauguration of the plan of accrediting herds of cattle found free from tuberculosis. Prior to the meeting in 1917 accredited herd work had been started in Illinois, Minnesota and Wisconsin, but the general movement of conducting the national campaign of eradicating tuberculosis was conceived in the deliberations of this association. Your officers have very wisely kept up the interest by giving the subject prominence in the arrangement of the annual programs.

We all looked forward to the meeting this year with probably a greater amount of enthusiasm than usual because the deliberations were to be presided over by a member who for a number of years gave into the association so much devoted work and enthusiasm that he was recognized purely through his sterling personality, ability and magnetism, as the outstanding representative to lead us in the perpetuation of the splendid enterprises this oranization has been and is affiliated with. Our anticipations in this direction cannot be realized because our leader has been taken from us, but under the inspiration he caused us to be filled with, we shall pursue our work with all the enthusiasm we can command, even though it will be blighted by sorrow for his memory. In the preparation of a paper of the character of this one, the writer takes the responsibility solely for injecting into it some thoughts which may not be considered either technical or scientific, but he predicates that part of the paper which may be called the human side of the subject, on the ground that whatever success has been attained in this work is largely due to the human interest that forms a vital part of this particular subject.

As fellow workers in the live stock industry, embracing live stock owners, the agricultural press, farm bureau organizations, live stock commission men, the packing interests, Dominion, State, County and Federal sanitary officials, we shouldered a Herculean task when we essayed to eradicate tuberculosis from live stock on this continent. We have pulled together now for three years, and it should be our endeavor to continue this teamwork to the consummation of the task in hand. The bureau is deeply conscious of the splendid spirit of co-operation that exists in this work, and takes this occasion to felicitate every individual who has contributed in any way in helping to launch this great work. It is the earnest hope and desire of all that the cordial relationship that has existed shall continue, not for the purpose of building up the reputation of any organization or of any individual, but of building up the live stock industry of this continent. In continuing along these lines we shall be doing only a common duty and fulfilling a responsibility with which we are charged, and which we assumed when we became associated with the live stock industry.

Three years ago the number of accredited herds in America could be represented by two figures; on November 1, 1920, we had 4,283 accredited herds and 24,616 berds which have passed one successful test in the process of accreditation. In addition to those two groups there were under supervision approximately 40,000 herds. The work is now being carried on in 45 states and one territory, and it is hoped that the remaining three states will take up the campaign within a few months. It is safe to say that the tuberculosis-eradication campaign is pretty well known in every state in the Union and that practically all of the breeders of pure-bred cattle are supporting it.

Noteworthy Absence of Coercive Measures.

That we have achieved this prominence within three years indicates that the work has a great deal of merit and is succeeding because of its indispensability to the live stock owners, rather than from any campaign of propaganda. We all appreciate the fact that no effort has

*Read at meeting of the U. S. Live Stock Sanitary Assn., Chicago, Ill., Nov. 29-Dec. 1, 1920.

been made in any direction to coerce live stock owners in placing their herds under supervision. No attempt has been made to secure Federal legislation with the idea of using force to eradicate tuberculosis of live stock. In fact, particular effort has been made to discourage any sentiment which may have been expressed advocating this work be made compulsory under either law or regulations. The theory in following this plan was that the work had sufficient virtue and was of sufficient importance to the live stock industry of the nation that it would appeal forcefully to the stockmen of this generation. It was believed that the demands they would make for the conduct of the work would be more far-reaching and effectual than any plan that could be based upon coercive measures, because the will of the live stock owners of this country to exterminate tuberculosis is potentially a greater force in shaping the campaign now in progress than any state or federal statutes that might be enacted. Probably no other work of this nature was ever under consideration for a longer period without active steps being taken to put it in operation. For more than twenty years the subject of eradicating tuberculsosis on a nationwide basis had been talked of at live stock sanitary meetings, by State and Federal officials, as well as by others interested in the industry.

Business Rules and Tuberculation Eradication Work.

From the inception of the campaign it has been the policy of the respective states and the Bureau and all others interested in the campaign to carry on the work on a business basis freed from the impediments of restrictions and the nullifying effects of elaborate technical regulations. In order that we might carry out that campaign and prove to the world that regulatory authorities can co-operate with business men along business lines, the plan was inaugurated of meeting every year with a committee representing the various pure-bred cattle associations and outlining with them the program of work. It can be said without fear of contradiction that this work is not impeded by any so-called red tape. As an indication of the alacrity with which the work is handled, I state that an owner of condemned tuberculous cattle in the states of Washington, Maine and Florida may all have their claims for indemnity settled within thirty days from the date when the tuberculin tests were applied. Claims which arrive in Washington in the morning mail are audited and, if correct, approved for payment the same day. It is right and fit and proper that this work should be conducted on business principles because it is a big business proposition, the largest of its kind ever undertaken in the history of live stock sanitary work.

The live stock owners of the United States have supported every effort made by the State and Federal governments in the extermination of diseases; they have supported these efforts in the halls of Congress and in the state legislative bodies and have been largely instrumental in securing funds with which to carry on campaigns of eradication. They have watched with grave apprehension the increasing percentage year by year of tuberculosis among swine and cattle slaughtered at Federal meat inspection establisnments. When the percentage of tuberculous hogs was less than one percent or even two or three percent the loss was not considered with much apprehension, but when it increased at the rate of one percent a year until in 1917 it was practically eleven percent, it caused much alarm and the demand then was that immediate steps be taken to check its progress. In some localities the amount of tuberculosis among swine has increased to a very alarming extent. Through co-operation of slaughterers arrangements have been made to mark some shipments of hogs by a tattoo, and in this way trace the shipment to its point of origin. Then the State and Federal officials advise with the owner and arrange to clean up the disease on his premises. This feature of the work will no doubt be enlarged upon, provided funds are available to prosecute it.

Accredited Herd Plan.

The principle of the states and Federal government certifying that herds of cattle are free of tuberculosis has stood the test of practice and has proven feasible and profitable to those owners who had the confidence to place their herds under supervision. As with most humanly contrived devices the accredited-herd plan is not without its imperfections. There is no gainsaying the fact that it could be improved, amended and revised, and as time elapses there will be further occasion to make changes to meet new conditions as they arise. It must be admitted, however, that it is a workable plan and answers the purpose for which it was devised. We should in justice to the instruments deliberate calmly before undertaking to make improvements, the outcome of which must. also, be subjected to the crucial test of practicability. We all appreciate the principles of evolution. It is not a good indication of virility

for any great enterprise to remain quiescent, because projects that do not move forward must necessarily be considered as falling into obscurity. The accredited-herd plan is undergoing a period of evolution. It is growing into a greater plan, a plan that will bring to the thousands of live stock owners the benefits it now brings to hundreds.

Conceding the fact that the principle of the plan is fundamentally sound and of economic value to the live stock industry, who can question the logic of applying the same principle not to individual herds of cattle, but to all the herds within a township or a county. It is a long stride to move from the herd unit to the county unit, but we are dealing with a problem that exists in every state of the Union, and if progress is to be made we must of necessity gain impetus as we move along. When inspectors are detailed to apply tuberculin tests to a dozen herds in a county, and there are demands from hundreds of owners in the same county to have their herds tested, there is little consolation for them to be informed that they must wait from one to six months until the test can be made.

While we have been working assiduously in this campaign for three years, tuberculosis among swine in the corn belt has been increasing, as is shown by the records at official meat inspection establishments. We cannot lay claim to making progress in the extermination of tuberculosis of live stock when the records obtained from actual postmortem work reveals the contrary. It is true that many herds of cattle and swine have been freed of tuberculosis, but during the same period the remaining infected herds are spreading tuberculosis to heretofore free herds. We are confronted with a condition which must be met and solved. We must make greater progress; we must expand the work; we must demonstrate beyond doubt that tuberculosis can be eradicated, not only from one herd or a hundred herds or a thousand herds, but from all the herds in any given area. We must take up this work on a more intensive basis in the states that are prepared to co-operate on that basis. The campaign must be shaped so as to concentrate in those counties where they are prepared to provide active and effectual co-operation. The bureau takes this opportunity of offering co-operation on that basis to any state in which there are located counties that are prepared to appropriate funds to enable the work to be pursued on an intensified scale.

With the limited forces that are now available or can ever be made available by funds appropriated by the respective states and Congress, we cannot hope to accommodate the millions of live stock owners who are ready and willing to enter into an agreement to exterminate tuberculosis. There is a plan, however, by which an organization may be built up in every county, that will be adequate to suppress the disease within its quarters. Whenever the live stock owners of a county elect that they shall exterminate this disease they will furnish through the county government the funds for the employment of a sufficient number of inspectors to carry on the work to a successful termination. The big handicap that we are encountering at the present day is the lack of authority for the counties to appropriate funds for the employment of inspectors to co-operate with the state and government forces. It is hoped that those states which have not already made plans to obtain legislation to enable counties to co-operate in the above-mentioned manner will do so. There are numerous counties in many of the states that are extremely anxious to have the accredited-county plan put in operation immediately, but they are not prepared to support their enthusiasm in as substantial a way as is necessary to permit of the practical operation of the work.

The form of co-operation furnished by counties varies according to the sentiment that exists among the live stock owners. For illustration: A year ago the Otsego (N. Y.) County Farm Bureau adopted the accredited-area plan as a five-year project campaign, believing that within that period sufficient headway would be made in the eradication of tuberculosis to assure a continuation of the project to completion. It was believed at that time that the action was a most progressive one, notwithstanding the fact that the only co-operaion forthcoming was the good will of the people. Within a period of one year from the date of that action, representatives of the various bureaus from every county in the Empire State in convention assembled unanimously agreed upon a plan whereby every County Farm Bureau should employ a veterinarian to devote his entire time to co-operative eradication work. That is a clear example of the evolution of the tuberculosis-eradication

campaign, and further evolvement will be made which will be the means of furnishing all of the assistance by the counties to tuberculin test all of the cattle within their jurisdiction. It doesn't require much foresight to discern the next complication that will follow such an arrangement: Where will the funds come from to pay the indemnities when the work is on such a basis? There is not sufficient Federal money in sight, neither have any of the states indicated that such vast sums as will necessarily be required will be provided for. Notwithstanding this anticipated difficulty, we shall proceed with the work in hand, operating under the conditions that exist, trusting that whenever a difficulty arises it may be solved at that time.

There are various other types of county co-operation which are now in operation—for instance the plan employed in Illinois, which consists of the County Farm Bureau paying fifty percent of the salary and expenses of the veterinary inspector assigned to work in the county. This plan is satisfactory for the time being, and as the work develops in the county will be improved to meet the arising changes. There is another plan in operation in Maryland, which is deserving of commendation. The County Board of Supervisors were petitioned by the live stock owners to employ a veterinarian to co-operate with the State and the Bureau of Animal Industry. The board was advised by its attorney that there was no authority to take such action until the regular meeting, which will be held next spring; whereupon, the live stock owners subscribed from their own purses sufficient funds to employ a veterinarian full time until the regular meeting of the board. There are operating in that county—Hartford County, Maryland—three inspectors: one employed by the live stock owners, one by the state, and one by the Bureau of Animal Industry.

In Gogebic County, Michigan, there is a full-time veterinarian maintained at county expense, who devotes his time to tuberculosis-eradication work.

Another plan which has been tried out and proved successful so far is that employed in Mississippi, where the question was submitted to a referendum, and in the two counties where elections have been held, viz.: Clay and Hinds, the vote was greatly in favor of carrying on the work. All of the cattle in Clay County were tuberculin tested during the winter of 1919-20, and the work is now going on in Hinds County. There are other plans in operation in various states, all of which have merit to them. It is not our purpose to lay down rigid rules regarding the form of co-operation, because we know by experience that it is inadvisable to say, "This is the one ideal plan." We can rely upon the good judgment of the officials in charge of the work in every state to work out a plan with the live stock owners.

Relative Value of Various Tuberculin Tests.

In contemplating plans for the extension of the circumscribed-area work, it is essential that we should provide a proper procedure for testing animals. Much attention has been given to the observation of the results of testing by the various methods for the period from the inception of the systematic eradication work to March 20, 1920. The subcutaneous method was the only official test, but it was soon recognized that only slow progress could be made by the constant use of this method alone; so far consultation with the state officials, the intradermic method was recognized as the first test under the accredited-herd plan in those states which would give it recognition. It was not a matter of expediency, however, to put into operation a test simply because it permitted the acceleration of the work. The intradermic test had demonstrated that it possessed qualities that should put it on the same basis of recognition as the subcutaneous test, as will be demonstrated at this time. In addition to the application of these two methods applied alone, every attempt has been made to urge the employment of a combination of two or more tests on those herds which were known to be infected. Data was gathered covering the period from January 1 to September 20, 1920, from the co-operating forces in 43 states. Before adding anything to this statement let it be noted that the tests reported do not contain any lots of cattle in which reactors were found unless such reactors were disposed of by slaughter and proper postmortem reports received.

By the subcutaneous method employed alone, 310,646 animals were tested, from which 11,649 reactors were removed, which on slaughter revealed 94 percent of lesions.

The intradermic method as applied alone shows 153,179 animals tested, from which 4,632 reactors were removed, which on slaughter showed 93.5 percent of lesions. There were comparatively few cattle tested by the oph-

thalmic method alone. Usually combinations were used.

The data submitted covering the combination of any two methods indicate tests applied as follows;

Combination	Number Tested	Number Reactors	Reactors Showing Lesions Percent
Subcutaneous and intradermic.	6,156	373	90.9
Intradermic and ophthalmic..	5,083	480	91.87
Subcutaneous and ophthalmic	5,208	501	96.18

The report seems to indicate that in those states where both tests have been employed on practically the same class of cattle the percentage of infection was practically the same.

Subcutaneous and intradermic combinations show that 212 animals which were found to be diseased on slaughter gave reactors to both tests; and further that the subcutaneous test removed 29 diseased cattle which failed to react to the intradermic; and that the intradermic method removed 98 diseased cattle which failed to react to the subcutaneous, indicating that, had either test been applied alone, a considerable number of animals would have remained in these herds which were in fact diseased.

These figures are based upon the animals which showed lesions of disease upon slaughter. It is noteworthy that of the total number of animals tested by these methods, 5,088 were tested by the co-operating forces of eight states, and that of these eight states the percentage of lesions found among the reactors obtained was 93.5 percent.

In connection with the application of the intradermic and ophthalmic combination the report indicates that 4,262 out of the total number tested were reported from ten states, and that from this number of cattle 441 reactors were removed, which on slaughter showed 94.1 percent of lesions.

The entire report shows that the intradermic test alone in this combination removed 34 diseased animals, while the ophthalmic removed 38 of a like character.

In the subcutaneous and ophthalmic combination it appears that out of 5,208 animals tested, 4,700 of them were reported as from eight states, and that 640 reactors were removed which showed 96 percent of lesions on slaughter. It is also shown that the subcutaneous test applied in this combination removed 62 diseased cattle, while the ophthalmic alone in the combination accounted for 95 diseased animals.

In summarizing these various combinations it appears that the best results, and I might add, the most satisfactory results, were obtained in states where the greatest amount of such work had been carried on.

With this in mind the Bureau advocates the use of all of the methods of tuberculin testing, not only for the purpose of devising a scheme which may speed up the campaign, but also to have at the command of the co-operating forces all of the available weapons which can be used in combating this insidious disease.

From observation of the various tests in combination, the writer is reluctant to condemn any combination, or to pick out a combination of tests and assert that they are superior to any other combination. It has been observed that in some herds which have been tested subcutaneously a number of animals are apparently immunized to the effect of tuberculin when injected intradermically, but this is not verified in all herds, and I have observed many reactors taken out of herds subcutaneously tested where these animals failed to react to that test, and the intradermic was applied immediately at the conclusion of the subcutaneous test.

On the whole, however, it appears that a combination either of the subcutaneous and ophthalmic, or the intradermic and the ophthalmic, results more satisfactorily than the subcutaneous in combination with the intradermic. Therefore it is recommended that the latter combination be employed only in an experimental way until more is learned about it.

Testing of Accredited Herds by Approved Veterinarians.

The uniform plan provides that accredited herds after being on the list for two years may be turned back to veterinary practitioners who have been approved for that purpose by the respective states and the Bureau of Animal Industry.

The states of Minnesota and Virginia have approved lists of veterinarians, and other states are now arranging to do likewise. It may be advisable to reduce the period required before herds may be turned back from two to one year.

Accredited Herds Removed From the List.

Since the beginning of the work, about three years ago, 74 herds of cattle have been removed from the list accredited as being free from tuberculosis. The presence of one or more reactors was the cause for removal. The number of herds taken off the list is small com-

(*Continued on page* 43)

Products Derived From Animal Body

By F. B. HADLEY, D.V.M., Madison, Wis.
University of Wisconsin.

THE bodies of our food-producing animals furnish man with a great variety of products of much commercial importance. The object of this article is to give a brief description of the origin, nature and uses of these products. They may be roughly classified for consideration into the following four groups: (1) fresh meat products; (2) cured meat products; (3) edible fats; (4) offals.

Fresh meat products consist of the various wholesale and retail cuts. They will be described more fully in connection with the other products derived from the muscular system. Normally from 26 to 30 percent of the hog carcass is sold in the fresh state, although there are seasonal fluctuations due to trade requirements for the various products prepared from the hog carcass. The entire carcasses of sheep and calves are sold in the fresh state. This also applies to the carcasses of cattle of good quality; while those of poor quality are known as "canners" and are worked up as canned and cured products of various kinds.

Cured meat products have been given special trade names depending on the species of animal from which they were obtained, for example, pork sausage, pigs' feet, bacon, dried beef, and corned beef. They do not spoil easily, so are most suitable for shipment to points where refrigerator facilities are inadequate.

Edible fats consist largely of lard, suet, and tallow. They are important by-products of the packing house and bring good prices. More attention will be given to them later.

Offals furnish substances from which the majority of the packing-house by-products are manufactured. They are of two kinds, viz., (1) killing offal and (2) cutting offal.

The *killing offal* comprises about 10 percent of the live weight of the hog, about 10.5 percent of cattle, and about 10.5 percent of sheep. A distinction should be made between these percentages and the dressing percentages of different animals, as these figures do not take into consideration the water and other contents of the various organs which are lost in slaughtering. This offal embraces the blood, brains, ears, head meat, hearts, jaw-bones, kidneys, livers, lips, tongues, snouts, spleens, sweetbreads, hides, stomachs, trimmings, and edible and inedible fats. The different by-products made from these organs will be described later in another section.

Cutting offal comes from the trimmings derived in breaking up the carcasses of hogs and shaping them into the standard cuts. It is used for making sausages and related products. The carcasses of cattle, sheep, and calves furnish no cutting offal, as no trimming occurs in cutting them for the wholesale trade. Through the utilization of the offals the modern packing plant wastes nothing. In the country slaughter house, it is impossible to utilize the offal to the best advantage.

Derived Products of the Skeletal System.

Many products are prepared from organs and tissues of the skeletal system. The bones are graded into (1) grinding stock, (2) manufacturing stock, and (3) stock from which edible products are made.

Grinding stock consists largely of the following bones: skulls, shoulder blades, forearms, buttocks, and hips. This stock yields inedible fats, glue and ground bone. From the fats are made such products as candles, cosmetics, glycerin, liquid fire, lubricating oil, polishing compound, soap, and stearic acid.

Glue is of enormous commercial value. As a "size" for glazing wall paper and writing paper it is employed extensively. It is also employed in the manufacture of furniture, leather belting, shoes, straw hats, book bindings, and sandpaper.

Ground bone is used largely as a fertilizer, for which purpose it is ground fine and sold as bone-meal. Green bones are ground rather coarse and used as a feed for poultry. Bone charcoal is used in sugar refining and to furnish black pigment for paints and shoe blacking.

Manufacturing stock consists of the shin and thigh bones of cattle. From it are produced the following: buttons, chessmen, combs, crochet needles, dice, knife handles, napkin rings, ornaments, pipe stems, powder-puff tips, tallow, tooth brush, umbrella handles.

Bone stock used for the preparation of edible products consists largely of the bones in the following wholesale cuts: sirloin, striploin, and rump of beef carcasses. From it edible tallow, a lard substitute, is prepared. The residue is used for glue making and bone meal as previously described. Red bone-marrow is commonly used by physicians who are prescribing it for certain diseases in which the bone-marrow is affected

(anemia). It is prepared for the trade by combining with chocolate to make it more palatable and by solution in alcoholic liquids.

Derived Products of the Muscular System.

The muscles of meat-producing animals supply man with an essential part of his diet. Meat is marketed in the fresh state, or frozen, and stored until needed. Other methods of preserving meat for storage are smoking, pickling, salting, cooking, and canning.

Among the more highly specialized products derived from the muscles may be mentioned meat extracts, meat juices, soups, meat scraps, and tankage.

Fresh meat is chilled in a cooler at 38° F. for several days to weeks, before being sold by the packer; on the farm it is allowed to hang a few days in order to lose the animal heat and to ripen. Fresh meat is marketed as (1) carcass beef, (2) wholesale beef cuts, and (3) retail beef cuts.

Carcass beef is sold on the wholesale market as sides and quarters. Two sides or halves of a carcass are called a "cattle." The right or closed side is so named because the kidney is closely attached. The left or open side has the kidney hanging, or suspended from the loin by a membrane and fat. The "skirt," or margin of the diaphragm extends to the tenth rib on the left side, forming the so-called "hanging tenderloin." The two sides are about the same weight, but the open one may be 1 percent heavier. No difference is made in the price of open and closed sides when sold separately. Sides are quartered or "ribbed" between the twelfth and thirteenth ribs when taken from the chillroom for shipment. The quarters are called fores and hinds. Regular hind quarters weigh about 47 to 49 percent of the total carcass weight and fores from 53 to 51 percent of the total carcass weight. Hinds are quoted about 25 percent higher in the winter months and up to 40 percent higher in the summer. This difference is due to the large amount of boiling and stewing pieces in the fore quarters —cuts which are more palatable and economical to cook in winter.

"Block beef," or side beef, is that of the best quality, and thick and fat enough to be sold over the butchers' block to the retail trade.

"Cutters" are dressed cattle which are not sufficiently thick fleshed or fat to be entirely utilized for the block, so are cut up into loins, chuck, plate, and other wholesale cuts. The best of these cuts are sold over the block while the poorest go for cured and canned beef products.

"Canners" are those carcasses from which none of the regular wholesale cuts suitable for butcher-shop use can be obtained and so must be utilized for boneless fresh meats and cured and canned beef products. Light fleshed cows, old dairy stock, thin animals and culls come under this head.

The *wholesale beef cuts* handled in Chicago markets are loins, ribs, rounds, chucks, plates, flanks, shanks, and the suet secured from the free fat of the carcass.

The loin is the highest-priced wholesale cut of the beef carcass, as it contains the most tender and best quality of flesh. It is separated from the round at the hip joint; the front shank just below the shoulder joint, and the hind shank obliquely from about the middle of the anterior surface of the tibia to near the distal end of its posterior surface.

The tenderloin, or "filet of beef," consists of the long muscles located ventral to the transverse processes of the lumbar vertebrae, on which they find origin, and extending back to the pelvis, where they are inserted. The great demand for this cut, which is secured from the cheaper grades of cattle, shows the importance of tenderness.

The *retail beef cuts* have been given certain well known trade names. Those from the loin are: butt-end sirloin, wedge-bone sirloin, round-bone sirloin, flat-bone steak, pin-bone steak, porterhouse steak, T-bone steak and club steak.

The value of the same cuts from different carcasses varies with the quality. The quality of the carcass depends on the relative thickness of the flesh, its tenderness, its firmness, its brightness of color, the distribution of fat in the muscle fibers, the clear white color and firmness of the fat, and the freedom of the carcass from bruises. Carcasses poorly covered with fat do not stand handling in the fresh meat trade, while those too darkly red in the lean and too yellow in the fat indicate age or finish on feeds that produce a more perishable carcass. Two very important factors affecting the value of the carcass are the lightness of the bone and the relative proportion of the valuable cuts.

Derived Products of the Digestive System.

As would be expected from the wide difference in the functions of the digestive organs, a variety of products is secured from them. Those of the greatest economic importance are as follows:

Tongues of food-producing animals are partic-

ularly suitable for making high-grade canned and pickled meats, as the flavor is excellent and the meat tender.

Stomachs of hogs are used for sausage containers, the lining being first removed in order to secure the pepsin which it contains. Pepsin is prepared for the market in the spongy, granular, scale, and powdered forms. A preparation known as lactated pepsin, composed of pepsin, pancreatin, lactic acid, diastase and hydrochloric acid, is employed to stimulate the secretion of the gastric and the duodenal glands.

Calves' stomachs yield rennet, which is used in large quantities by manufacturers of cheese. A large Chicago packing firm states that it has received one order for rennet that would require for its preparation more calves' stomachs than there are calves slaughtered in the country in one year.

Intestines are chiefly valuable as sausage casings, for which they are used in enormous quantities. When damaged by worms they are not suitable for this purpose. The large intestine of the hog is chopped up into "chitterlings," a food that is fried like oysters. The first twenty-four feet of the small gut of sheep is used for the manufacture of strings for musical instruments and tennis rackets, and as suture material or "catgut" for surgical ligatures. Among other things made from the intestines are: snuff containers, gold beaters skins, and fancy bottle caps.

The contents of the digestive organs together with fatty wastes are consigned to rendering tanks. Here they are cooked for hours under high pressure steam. Two important commercial products are obtained by this process, viz., tankage and inedible fats.

Tankage is of two grades. The better grade is known as digester tankage; it is rich in protein, as it contains considerable muscular tissue, but is relatively poor in fat. As a stock and poultry feed it is widely used. The cheaper grade of tankage is manufactured into fertilizer, but its constituents are not so readily available as a plant food as are plant and mineral substances.

Inedible fats are employed in the preparation of the following mentioned articles: glycerin, heavy lubricating oils, illuminating oils, ointments, red oils, lubricants, soaps, special leather oils, stearic acid for explosives, and torpedo lubricating oils.

Edible fats of animal origin are staple commercial products, the importance of which has been recognized for centuries. It is estimated that each person in the United States consumes about forty pounds of fats annually. These fats include butter and butter substitutes, lard and lard substitutes, cooking and salad oils. Twenty-four pounds or sixty percent of this fat is of animal origin, the remainder is of vegetable origin. Butter-fat heads the list, with lard next. Beef tallow and neutral lard are largely used in the preparation of oleomargarine and lard substitutes.

The best grade of leaf lard is known by the trade name "kettle-rendered." It is prepared from the kidney fat of hogs, while in the manufacture of the cheaper grades of lard ruffle-fat from the intestines and fat from other parts of the carcass are used.

Livers are sold fresh or used in the manufacture of liver sausages; as they spoil readily, the packer must handle them with dispatch. A pharmaceutical product representing the natural bile salts (sodium glycocholate and taurocholate) free from all of the objectionable and inactive constituents of the bile has been prepared. This product is useful in stimulating the liver to activity and in relieving constipation, auto-intoxication, and obstipation. Cholesterin, another constituent of bile, is said to be an effective antidote against snake venom. It is prepared in the chemically pure form. Bile is used in the mixing of paints to give them tenacity and fluidity; it is also employed as a substitute for India ink and medicinally as an enema. It is used by launderers to prevent running of colors in fancy fabrics, and by cleaners to remove spots from clothing. Gallstones are sold in the Orient, where they now bring $325 a pound, but the use to which they are put is not known.

The fresh pancreas is known by butchers as the "false or belly sweetbread" and is sold for food. The pancreas of the hog and ox is extracted and the extract standardized. This represents the three principal enzymes of the pancreas, vis., trypsin, steapsin, and amylopsin, and is known commercially as pancreation, a digestant. For converting starch into sugar it is preferable to vegetable diastase, because its activity is more permanent.

A monoglandular product containing specific hormones is duodenal substance. This is employed in digestive disorders. The exact nature of its action is apparent when the function of the duodenal glands is recalled.

(To be continued)

Every man owes some of his time to the upbuilding of his profession.—Theodore Roosevelt.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D. V. S.

Strangles and Maxillary Myositis.

EKELUND. Svensk. Veter., 1919, p. 169.

The author described in detail outbreaks of strangles in the year 1917 and made very interesting comparisons on this disease in the last 20 years. For instance, he emphasizes the fact that poor dusty food has no influence on the malignancy of the disease. He observed numerous cases of abscesses in the mesentery. Among these, he found cases in which the horse failed to show any symptoms of disease but died suddenly as a result of such abscesses. Contrary to Hutyra, the author found that the diagnosis of such abscesses does not offer great difficulties. In case a horse which recovered from strangles remains emaciated for a long time and has an unthrifty condition otherwise, it is always advisable to make a rectal examination, whereby it is very easy to establish whether any metastatic changes are present in the mesentery of the intestines. Of 135 animals immunized with serum, only 31 developed the disease. In those which contracted the infection the disease developed a considerable time after serum injection, so much so that it could be accepted that the passive immunity produced by the serum was no longer effective. Three cases of purpura hemorrhagica complications were successfully treated with intravenous injections of 135 cc. antistreptococcic serum.

The author further described a very interesting disease which was characterized by an inflammation of the maxillary muscles and which occurred mostly in colts and in horses up to two years of age. The disease manifested the following symptoms: Emaciation and a stary coat were usually observed in the affected animals. Aside from this, there was a catarrh of the respiratory passages, and in some cases intestinal parasites also. As the first indication there appeared a doughy edematous semi-spherical swelling above the supra-orbital cavities, swollen eyelids, hard, not edematous, painful swelling of the masseter muscle, and also pain on palpation of the intermaxillary space and parotid region. After three to four days the edematous swellings disappeared and the swollen muscles gradually atrophied. At the same time, progressively, a more or less pronounced paralysis of the pharynx developed. The affected animals had a voracious appetite and thirst, but could not masticate or swallow. In drinking, the colts sunk their mouths deep into the pail, but could take only a little water, most of it returning by the nose. Death followed from foreign body pneumonia or inanition. The autopsy revealed in acute cases a flabby consistency of most of the muscles of maastication, with a yellow or white discoloration. At times the same changes were found in other muscles.

In two cases the disease developed as a complication of strangles, but there appears to be no etiological relation between the two diseases. While the author had observed in the twenty-five years previous to 1917 only seven or eight such cases, it is peculiar that during the outbreaks of strangles in 1917 not less than twelve such cases came to his attention. In the investigation of similar cases at the veterinary college at Stockholm, streptococci were repeatedly isolated and designated as the probable cause of the disease.

Relation of Some Acid-Fast Saprophytes to the Tubercle Bacillus.

Dr. B. Lange, Duetsche Med. Wchn. Schr., 1920, p. 763.

Investigations of the acid-fast saprophytes have a three-fold significance. First of all, acid-fast saprophytes may be mistaken for true tubercle bacilli. Next comes the question whether such saprophytes may change into a parasitic type and, finally, the relationship of both bacterial groups must be considered; that is, whether the acid-fast saprophytes might find application for curative and immunizing purposes in tuberculosis.

Lange conducted his investigations with the so-called "trumpet" bacilli which are regularly found in used wind instruments. He established that they are very widely distributed acid-fast saprophytes which, for instance, have also been frequently demonstrated in the dydrant water and which no doubt get into the instruments while they are being rinsed

with water. The tenacious slimy deposit collected inside of such musical instruments is a favorable nutritive media for acid-fast, and many other kinds of bacteria.

The investigations of the author have established the identity of the various acid-fast saprophytes with the tubercle bacilli of cold-blooded animals. This only substantiates the contentions of Weber and Taute. In view of the identity of these organisms they must be considered only as modified tubercle bacilli of cold-blooded animals, and, therefore, there can be no significant difference in their protective and curative action on human tuberculosis, provided the material for vaccination has been uniformly prepared and used under the same conditions. According to the immunizing experiments, the "trumpet" bacilli are at least of the same value as the other known similar strains and they may even possibly excel them.

Some Important Findings of Animal Parasites.

PROFESSOR SCHLEGEL. Berl. Tier. Woch., No. 16, 1920.

During 1918 Schlegel recorded the following findings:

1. The gastrophilus nasalis was found in one case, heavily infesting the palate and the stomach of a horse and causing pharyngitis and foreign body pneumonia.

2. Sclerostomiasis in army horses. In the spring and summer the horses of five different troops became affected with severe anemia. The autopsy disclosed sexually mature specimens of the sclerostomum bidentatum in the large intestines, as well as the larvae of the same parasites in aneurisms of the anterior mesentery artery in the loose connective tissue of the portal lymph-glands, and dozens of encysted forms in the wall of the large intestines, forming there bean-sized hemorrhagic necrotic cysts. The large intestines also contained sexually mature sclerostomum quadridentatum and on the mucous membrane of the same section of the intestines sclerostomum edentatum, which parasite was also present in the larval state under the peritoneum in dollar-sized bluish red hemorrhagic herds. Finally thousands of sclerostomum tetracanthum were found in the contents and on the mucous membrane of the cecum and colon.

3. Strongylus nodularis was responsible for great losses in geese. In the passage between the glandular and muscle stomach the necrotic deposit contained a network of numerous thread-like strongylides.

4. Dispharagus nasutus produced in chicken enzootic outbreaks with fatal terminations. In this instance also the nematodes were found in the passage between the glandular and muscle stomach as well as in the intestines.

5. Troplisurus fissispinus and echinorphynchus polymorphus produced in young ducks fatal infestations. The first named parasites weree found in a thick grayish white mucus and on the mucosa of the glandular stomach. The last named in the small intestines.

Can Cattle Be Vaccinated Against Anthrax and Blackleg at the Same Time?

SZASZ. Zeitschr. f. Infek. d. Haust., Vol. 19, p. 375.

Vaccination against the two diseases should not be carried out simultaneously, as there is danger of a too severe reaction and, besides, an unfavorable influence of the one immunity against the other must also be considered. The author recommends vaccination against anthrax first; thirteen to fourteen days following this immunization, every possibility of a reaction has vanished and the vaccination against blackleg may be undertaken.

Presence of Virus in the Spleen of Rabid Guinea Pigs.

REMLINGER. Ann. de l'Inst. Pasteur, No. 32, p. 406.

Out of 42 rabid guinea pigs the spleen was found infectious in eight cases. In some cases the spleen was removed before, in some shortly after death, and in other cases after the animals had been dead from one to three days. There was no difference in the infectiousness of the different spleens, which proves that the spread of the virus after death cannot be considered. The rabies virus, therefore, circulates in the blood more frequently than has been assumed.

Absorption of Rabies Virus By Healthy Mucous Membranes.

REMLINGER. C. r. Soc. de Biol., No. 80, p. 951.

Of 30 guinea pigs in which rabies virus was dropped into the nose, 11 became affected. An infection through the conjunctival, vaginal, penis and anal mucous membrane was not successful. These results speak in favor of the views of Gaucher, who contends that the mucous membranes covered with pavement epithelia do not absorb fluids; whereas those covered with cylindrical epithelia permit the absorption of infectious fluids.

Veterinary Surgery

Edited by L. A. MERILLAT, V.S.

Expulsion of Placenta by Injection of Water Into Umbilical Vein.

At the 1916 meeting of the Northwestern Ohio Veterinary Medical Association, Shaw, a practitioner of northern Ohio reported good results in removing stubborn after-births by injecting water into the placental vessels with a fountain syringe or pump. Shaw did not claim a priority but gave proper credit to the medical profession without, however, mentioning definitely the source of the information that led him to apply the method to animals.

According to the Lancet of Dec. 11, 1920, the method has recently been used with considerable success in Germany in removing the placenta from women, reviving a device that is almost a century old but which for no accountable reason had passed into disuse. Professor Mojon of Genoa first practiced this method in 1826 and published an account of his experiments. At that time several obstetricians made practical use of the operation and with very good results in adherent placenta. It is possible that sepsis or possibly air embolism brought the method into disrepute for these were in the ante-aseptic days. At least oblivion overtook it until 1914 when it was revived by Gabaston of Buenos Aires, who in a published article claimed to have reduced the morbidity and mortality from retained placenta to nil. In 1919 E. Frey-Bolli (*Correspondenzblatt f. Schweizer Arzt*) reported 53 cases of adhered placenta treated by the injection of 300 to 500 grams (approximately ½ to 1 pint) of normal salt solution or boiled water into the umbilical vein. In 47 percent, the placenta came away itself and in 41.5 percent after slight pressure on the uterus. In the other cases he had to resort to other methods. K. Borgberg of Copenhagen in the same year reported good results and W. Gejrot (*Hygiea*, October, 1920) wrote an article containing favorable comment.

We have personally used the method twice in cows since 1916. In both cases the placenta came away within an hour. The first case was a cheap grade cow of doubtful breed kept in a city feed stable. She dropped a calf during the early morning hours and not having expelled the afterbirth at noon the owner became alarmed and called for help. On examination the whole membrane seemed to be intact, and since it was just a few days after Shaw had made his report before the Northwestern Ohio Veterinary Medical Association, the method was given a trial without making any manual exploration of the uterus to determine whether we were actually dealing with an adhered placenta. A canula was tied into the vein and about a gallon of boiled water was instilled with a pump. The whole protruding part was then ligated with a strong string. In about thirty-five minutes, after a slight straining the whole placenta was expelled.

The second case occurred in May, 1920. The subject was a grade Guernsey. The calf was well developed but small and weak, but as the owner did not have any record of the date of service there was some doubt as to whether the birth was premature or not. On examination the placenta was found to be adhered. The operation was performed as above described with favorable expulsion about an hour later.

This seems to be the full history of the method to the present day from available data.

As adhesion of the placenta has not until very recently been regarded as of sufficient consequence to call for immediate attention, veterinarians have probably not found it applicable to the rotten mess they usually find and thus the publicity given to the method by Shaw in 1916 was soon forgotten. Now that there is assurance from the medical profession that it has merit and the owners of cows are rapidly learning that in adhered placenta they have a very serious condition, would it not be well for the veterinary obstetrician to try it out on a large scale?

The method probably influences expulsion by producing a retroplacental hydrometra, and by stimulating the uterine contractions. Cold water is said to be preferable, in that it will cause prompter stimulation than warm.—L. A. M.

Function of Corpus Luteum.

In an article appearing in "Surgery, Gynecology and Obstetrics," F. H. Oschner states that an unabsorbed corpus luteum prevents ovulation and is a common cause of sterility and that the expression or excision of a false one invariably brings on menstration, but that the rupture of a true one interrupts pregnancy during the early stages of gestation and may be regarded as a cause of abortion. These facts coming from such an authoritative source are well worth a thought from those engaged in sterility work. Parallel observation have of course been made by veterinarians.—L. A. M.

Paromphalocele.

The writer has encountered this condition but twice in thirty years of observation among surgical patients. The first case was observed in a three-year-old mare submitted for an operation for what was thought to be a navel hernia. On first sight it was observed that the enlargement, which was the size of a goose-egg, appeared to occupy a somewhat anterior position for a hernia through the navel orifice, but as the subject was rather sensitive to palpation of the region, the abnormal location was not discovered until the animal was cast and rolled into position for operation. It was then found that the navel cicatrix was normal and that the perforation of the abdominal wall was located six inches farther forward directly on the linea alba. The boundary of the opening formed an irregular circle that would freely admit all the fingers of the hand. The owner stated that the enlargement had been apparent since the animal's earliest days of colthood, but that it had been growing during the year previous to the date of examination. The sac was composed of the usual two layers, skin and peritoneum, and the contents were easily evacuated by manipulation. The sac was ligated by the "skewer method," with results that were not wholly satisfactory. A year later the hernia, although somewhat flattened, was still present.

The second case occurred in a thirty-five pound Berkshire gilt. The subject was one of a litter of eight—four males and four females. Two of the males were affected with scrotal hernia and one was a cryptorchid. The females were normal with the exception of one which presented a fluctuant sac adjacent to the umbilicus, which at first was thought to be an omphalocele, but on placing the animal upon its back for operation the orifice was found to be located three inches in front of the umbilical scar and slightly to one side of the median line. The linea alba formed the internal boundary of the orifice, which was large enough to admit the index-finger freely. The sac was skewered and ligated with satisfactory results and without complications.—L. A. M.

Extirpation Necessary in Serious Cases.

On page 494 of the October issue, Dr. Merillat advocates aspiration of the serous sacs of horse's shoulders instead of the old method of lancing, but in this I cannot acquiesce with the most learned doctor, for I very often find mucosal tissue in these sacs, and in three of them I have found thin fibrin coagulations floating in the fluid, and in nearly every instance they stop the drainage before it is half completed. I am sending you two specimens, one from a shoulder lanced yesterday and the other from one lanced today. I would like to ask Dr. Merillat if he advocates leaving the tissues in the serous sac until they are absorbed, or is it better to lance and remove them.—T. C., Ark.

Reply: An injury of the shoulder serious enough to cause necrosis of tissue cannot very well be classified as a mere serous sac, and would of course require some kind of extirpation in lieu of simple aspiration. Serous sacs containing flocculent particles in considerable quantities are too old to aspirate successfully, because, as the querist says, the liquid is difficult to aspirate, but chiefly because at this age the sac has developed a thick, smooth wall composed of leucocytes and connective tissue phagocytes, that tends to assume the character of a serous membrane. As this is not destroyed by removing the contents, the sac will refill and will not reattach itself readily to the underlying musculature.—L. A. M.

Treatment of Tetanus.

A very low mortality is reported in eighteen cases by Ashhurst* through the use of concentrated antitoxin intraspinally, antitoxin intravenously and chloral and sodium bromide per os. The mortality was only 15.38 percent. The author emphasizes the importance of early, intensive and efficient treatment.—L. A. M.

[2] Societe Internationale de Chirurgie, Paris, July, 1920.

It is for us to discharge the high duties that devolve on us, and carry our race onward.—Garrison.

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.

Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

The Ovaries

THE ovaries, normally two in number, are the essential reproductive glands of the female, quite analagous to the testicles of the male. Their secretion is spoken of as the ovum, and the secretion of the testicles of the male, as the spermatazoon. When brought in contact under Nature's normal conditions, the ovum and spermatazoon fuse into one cell, to again subdivide into many, and by an intricate process of evolution, a new mammalia is formed.

The structure of the ovaries and their function of ovulation are the things that will interest us, so that we may better understand the pathological conditions and their effects upon reproduction.

It is generally understood by those familiar with zoology, that the size and location of the ovaries of domestic animals vary considerably, but in our studies of sterility, the two animals that concern us most at this time, and in fact the two animals on which we are able to make satisfactory manual examinations in an attempt to diagnose the various irregularities of the female generative organs, are the mare and the cow.

The only comment we will make on the former, is that the mare's ovaries are much larger in size and firmer in structure than those of the cow; they are also suspended much closer to the sublumbar region and farther forward than are those of the cow, as the cornua of the mare's uterus extend forward and upward from the fundus.

The ovaries are usually present in the bovine at the time of birth and develop in size quite rapidly, ordinarily reaching full size by the time the animal is two years old. They are normally suspended from the sublumbar region about midway between the anterior outlet of the pelvis and the kidneys, and are lodged in a depression of the broad ligament, which with the apices of the cornua in the cow, turn outward, backward and slightly upward, being located on the right and left of the median line but a short distance—four to eight inches—anterior to the shaft of the ilium.

All of this is important information in locating the ovaries for examination or surgical interference. The tendency of the inexperienced operator is to reach too far in, when attempting to locate an ovary.

The ovary is now looked upon as a true organ of internal secretion, or an endocrin gland. Castration before sexual maturity causes failure of genital development, while in adult life it produces immediate regressive changes in the uterus, vagina and external genitals, manifested by well marked atrophy of the parts.

Animal experimentation has shown, however, that this genital atrophy can be inhibited after castration by transplanting the extirpated ovary in distant parts of the body, and if this is done on young animals, the other genitals may develop normally.

It is common knowledge that complete castration ordinarily prevents any evidence of subsequent estrum, but experiments have been conducted to show that implantation of ovarian tissue may reproduce manifestations of heat.

All of this information is of much advantage in helping to arrive at a conclusion as to the part the ovaries play in irregular breeding or sterility.

Structure.

The ovary is a solid ovoid body attached to the margin of the broad ligament by a short, thick, connective tissue pedicle, in which are enclosed the blood-vessels which supply the ovary. At a point where the pedicle enters the ovary and becomes continuous with the connective tissue stroma of the ovary, there is a depression or indentation known as the *hilum*.

For study the ovary is divided into a central or medullary part, which reaches the surface only at the *hilum*, and an outer portion, styled the *cortex*, covering the inner portion, like the bark

on a tree. This is covered by a layer of the peritoneal epithelium and is known as the *germinal epithelium.*

The medulla consists of fibromuscular tissue and blood-vessels.

The cortex also contains blood-vessels and large numbers of ova, which are in all stages of development, from the genital cells of the germinal epithelium, up to the more mature germ cells contained within the epithelial sacs, and are known as the graafian follicles. Immediately beneath the germinal epithelium and rather between it and the cortex is a dense layer of fine connective tissue, known as the tunica albuginea.

Graafian Follicle (Ovisac).

At least a meager knowledge of the structure and activities of the graafian follicle is very desirable, even for a busy practitioner, if he is at all interested in the question of sterility.

The essential function of the ovaries seems to be the developing and ripening of the follicle. The process begins very early in life, probably at the end of intra-uterine life. Up to the age of puberty, however, the ripening is aborted and only at that time do they develop into true corpora lutea.

A graafian follicle consists of an outer layer of follicular cells or tunica granulosa and the inner, granular cells, the *discus proligerus.* Within this is the follicular fluid and the ovum. It is the ripening of these follicles and the discharging of the ovum that constitute ovulation; the fluid gradually increasing in quantity until when mature the follicle is pressed up to the surface of the ovary and ruptures.

In the cow about one-half of the ovisac protrudes beyond the ovarian surface. This blister-like protrusion is about half an inch in diameter and is easily ruptured when manipulating the ovaries, and naturally might be mistaken for a small cyst.

After the escape of the ovum and part of the liquor follicular from the graafian follicle, the walls of the latter collapse and the space remaining fills with blood, degenerated epithelium, and a yellow refracting pigment known as lutein, hence the name corpus luteum or "yellow body."

The corpus luteum which is thus formed, increases in size and solidity until finally from the fourth to the sixth day after ovulation there is formed a yellow body that may be located in manipulating the ovaries.

This yellow body becomes more distinct each day and shortly after the sixth day a wartlike protusion may be felt on the smooth surface of the ovary. The yellow body, true or false, may assume a proportion as great or greater in size than the original ovary, and if dislodged by pressure, the ovary not infrequently has a feeling that much of its tissue has been displaced by the corpus luteum or torn away by pressure. This fact sometimes gives an inexperienced operator some concern; however, such findings are clinically a good indication, since such ovaries are very apt to prolifierate promptly and physiologically, as against larger or harder ovaries, which indicate cystic degeneration or an ovaritis that is often tedious or impossible to relieve.

As to what becomes of this corpus luteum or clot, will depend upon three conditions:

First, if the animal is bred and conceives, the corpus luteum begins to form at once and continues to increase in size slightly for a period of about two weeks, not differing noticeably up to this time, from the corpus luteum that follows an ovulation when the animal has not been bred, or if bred has not conceived, but the corpus luteum of pregnancy usually remains firm in the ovary up until, or after the end of the period of gestation, while the corpus luteum that is formed after an ovulation, when an animal has not conceived, is usually absorbed before the next estrual period, which in the cow, is normally around twenty-one days. The false corpus luteum is normally absorbed about the eighteenth day; however, it may remain in one of the ovaries much as if the animal had conceived, and the animal fail to show evidence of heat for months; or still another condition may occur, a corpus luteum may remain in one ovary of a non-pregnant animal, the animal ovulate the next estrual period from the other ovary and a corpus luteum form in this ovary, which may also become a persistent false corpus luteum, and either one or both of these corpora lutea may inhibit ovulation and estrum just as certainly and just as persistently as a true corpus luteum, or a corpus luteum of pregnancy, until they are either removed by pressure or absorbed.

As to how long a false corpus luteum might persist before spontaneous absorption would occur; so far as I know there is no definite knowledge on the question. I have reason to believe that a false corpus luteum may be retained as long as eight months or more.

I had occasion to examine a three-year-old Holstein heifer that had calved normally at the age of twenty-eight months. She was in heat on the twenty-eighth day after calving and was bred. She showed no further evidence of estrum

the following eight months, at the end of which time an examination revealed a normal smooth corpus luteum in the right ovary. It was easily removed under pressure; the animal was in heat on the fourth day following, was bred and conceived.

We often find in the ovaries what is styled degenerated corpora lutea, that is corpora lutea that instead of being round, smooth and encapsulated, as they normally are, are more flattened, softer, and break up under pressure, breaking away in shreds, so to speak. Animals with such corpora lutea often have a history of very irregular periods of estrum, but when not associated with other pathological conditions, such ovaries usually begin to function quite normally and regularly after one or two massagings; in fact ovulation and estrum take place in such animals in an overwhelming majority of cases from three to seven days after removal of the corpus luteum, and conception from the first service in such cases is not at all uncommon, even in animals that have been sterile or have had irregular periods of estrum for a year or more.

In other cases, the corpus luteum may be very small and require considerable centralized pressure to remove it, particularly so where the corpus luteum is circumscribed with one or more ovarian cysts, or in the case of cystic degeneration of the ovaries, where they are enlarged and rubber-like; still in other cases a fair-sized corpus luteum may be encapsulated so firmly, particularly where the ovary is enlarged and hardened, constituting ovaritis, that it is impossible to remove the imbedded corpus luteum at the first handling, but thorough massaging will usually stimulate circulation and soften the ovarian tissue, making its removal possible at a subsequent handling, four or five days later.

I have a record of one case where I was not successful in removing the imbedded corpus luteum until the third handling. A detailed history of this case might be interesting.

A valuable pure-bred cow, aged eight years, that had failed to conceive for three and a half years, was presented for examination with no satisfactory history except that she had been more or less of an irregular breeder most of her life, but so far as her history revealed had not aborted or given any other evidence of serious infection. Her periods of estrum during the three years just past were very irregular; in fact she had been pronounced pregnant twice, once having gone seven months without evidence of estrum.

On examination I found all her organs apparently normal except the right ovary. The left ovary was perhaps a trifle small for a cow of her age and size but of good texture and in every way quite normal so far as could be determined by manipulation. The right ovary was about the size of a pigeon's egg, smooth and very hard. Vigorous massaging produced but little effect or softening; massaging was repeated on the fifth day when the organ gave evidence of some hyperemia and was slightly compressible, but any amount of pressure I could exert through the vagina failed to make even a dent in the ovary. Massaging was repeated again on the eleventh day following, with the result that a degenerated corpus luteum was squeezed from the ovary.

The animal showed estrual excitement the third day following and it continued so constantly that on the fourteenth day we examined her again and found two small cysts in the right ovary. These were crushed and the excitement abated practically at once.

On the eighteenth day the animal had what was apparently a normal estrual period and was unsuccessfully bred. There was a recurrence of estrum on the twenty-first day when the animal was bred and conceived.

Value of Vaccine Treatment for Abortion.

I am having trouble with a herd of cattle in which contagious abortion seems to exist. There are about fifteen cows and eight or ten yearling heifers in the herd. They abort about the eighth or ninth month, some of the cows going almost full time, but the calves always die and the cows generally retain their placentas.

I would like to have your views on the vaccine treatment. At what period would you administer bacterins if you used them?

Would you vaccinate both the heifers and the bulls? If so, would you segregate them from the remainder of the herd? Would it be advisable to vaccinate a cow after the discharge had ceased and then put her back with the remainder of the herd which is already affected?

How far advanced in pregnancy should a cow be before you would hesitate to vaccinate her? What success have you had in giving 100 c.c. of a two percent solution of phenol, subcutaneously, weekly, to prevent bloating?

These cows have aborted only once, and as some of them are registered Holsteins the owner naturally desires to clean up the herd, and as there is not much data available on the use of

vaccines, I am appealing to you for information. I have had no success with bacterins used upon other herds.—W. G. S., Ill.

Reply by DR. DEVINE: As to the vaccine treatment, authorities are not agreed as to its value, consequently each has a right to his own opinion.

If I were to use vaccine in the herd you describe, and I would, since you report such universal abortion, I would use the live organisms.

I have a feeling based on very limited experience, that the vaccine treatment, if administered in increased graduated doses, before an animal is bred, it does produce in some animals more or less of an immunity, but I am not ready to make any definite statement on it and shall not be until I can see it used in a number of herds and used on only part of the herd, or on every other animal, equally exposed under natural conditions, and in such a degree of exposure as one would meet in ordinary dairy herds, or in herds where they are trading sires and animals are moved back and forth to different farms from time to time. Results under such conditions would be rather convincing.

As to bacterins, I am entirely satisfied that I have had no beneficial results from bacterin treatment, because I have tried it out under the conditions enumerated above, but I am not at all satisfied with the way I have been using them in the past. I used them in the way suggested by those producing and marketing them; that is, two or three injections during the early months of pregnancy.

If we stop to consider the conditions associated with this infection, I think we will see at once that we could hardly expect results from their use by this method, unless by chance they were administered before the animal became infected and were then capable of building up a true immunity against future infection during the period of pregnancy. There seems, however, to be ample proof that bacterins are not capable of producing such immunity; if, however, bacterins are capable of increasing the antibody content, it is my belief that we have not been using them to best advantage.

It is common knowledge that the Bang organism works but little disaster in the uterus up to the fifth month. If bacterins have any value in increasing antibodies, why not fight this infection from conception to the end of gestation, or at least *during the months* when we might hope to mitigate or possibly hold entirely in check the pathological change that takes place in the uterus during the last four months of pregnancy, leading as it so often does, to the death of the fetus, retained membranes and serious lesions that later interfere with conception. This is of course as yet an uncharted sea, but I hope the coming year to be able to give special attention to this phase of the subject.

I question the value of vaccinating the bull.

As to the phenol treatment, it is my opinion that it is absolutely without virtue and consequently a waste of time.

Do not disregard sanitation.

Milk Fever Following Abortion.

A grade Holstein cow was found down with a severe attack of parturient paresis. A veterinarian was called and administered the usual air treatment together with stimulant treatment hypodermatically, which I learned was administered once daily for three days. The cow failed to improve.

Upon the third day in the absence of the attending veterinarian, I was called to attend the cow. I found her in a comatose condition, all the symptoms of parturient paresis being present. I inflated the udder with a common milk fever outfit and gave her an ampule of sterile camphorated oil. I repeated the oil in an hour, and five hours afterward the cow was on her feet and eating. Two days later, she was found down again, the same symptoms being present. The same treatment was administered and she again responded to the treatment and got up. She seemed to be perfectly normal for several days, but one morning the owner again found her down and unable to rise. She showed some symptoms of milk fever, but she failed to respond to the usual treatment and died before night.

The second case was that of a grade Holstein cow that aborted at the seventh month, retained the placental membranes, and two days afterward developed a typical case of parturient paresis. I inflated the udder with oxygen gas and gave an ampule of sterile camphorated oil. She was up in four hours and made an uneventful recovery.

From the literature at hand, I am unable to find a report of a case of milk fever following an abortion or where the placenta had been retained. In my experience of ten years in a dairy section, I have never observed a similar case.

What say you veterinarians in dairy sections? —R. C. F.

Swine Practice

Edited by A. T. KINSLEY, M. S., D. V. S.

Porcine Abortion*

SOME of our experiment stations are conducting experiments to determine, if possible, the cause and methods of control of porcine abortion, and those interested in the swine industry are anxiously awaiting their reports. The available information relative to this condition has been obtained by observation of affected herds, by consultation with veterinarians, by correspondence, and by conferences with pure-bred breeders. This preliminary report will deal only with generalities concerning the etiology of the disease and with suggestions concerning control measures.

Abortion is a term signifying premature expulsion of the fetus. The average period of gestation in sows varies from 110 to 115 days. Abortion in sows has occurred in various sections of the country for many years, but the condition was not sufficiently prevalent to cause alarm until the fall of 1919 and the spring of 1920.

The losses due to abortion varied in different sections of the country, from 1 to 60 percent of the fall pig crop of 1919 and the spring pig crop of 1920. In 33 counties in one state there was estimated to be 184,710 breeding swine, and abortion occurred in five-sevenths of the breeding herds, in which there was a total of 125,410 breeding animals. In 14 counties of one state the loss of the 1920 spring pig crop was estimated at 20,100 pigs. On one farm, 40 of the 56 breeding sows aborted in the spring of 1920.

It seems very probable that the recent extensive occurrence of abortion in swine does not signify that there will be a continued prevalence of the malady to the same extent; in fact, the recent reports indicate that the majority of the losses from this condition occurred in the fall of 1919 and the spring of 1920.

Breed and Age Not Factors.

Abortion in swine is not confined to any particular breed; it apparently occurs as frequently in grades as in pure-bred herds. The condition occurs in sows of all ages, although some veterinarians are of the opinion that gilts are more subject to abortion than aged sows. Observations of different herds in which abortions have occurred, demonstrate that feed and water are not factors in the causation of the disease. Some breeders attribute the abortion in their swine to tankage. No doubt, fermented and spoiled foods would be predisposing factors to abortion as well as to other disease conditions. Some cases of abortion in swine have been investigated in which the pregnant sows were fed on screenings from wheat and rye, or the sows were permitted free access to straw piles. Abortions in some of these cases may have been due to ergot. Environment has not been a factor in the production of abortion, for it has occurred as frequently in sows maintained in sanitary quarters as in those kept in filthy, insanitary quarters.

An occasional abortion occurs in swine as a result of injury, and some abortions occur as a result of other diseases, such as cholera, swine plague and infectious necrotic enteritis.

Specific Organism Not Yet Identified.

A greater number of the abortions that have recently occurred in sows were apparently of an infectious origin. The specific, causative germ of abortion, if there be such, has not been identified. A variety of germs have been isolated from the aborted fetuses and uterine discharges, such as B. coli communis, B. bipolaris, B. suipestifer, various pathogenic cocci, streptococci, and less frequently representatives of the paratyphoid group.

*Portion of report of Committee on Differential Diagnosis of Swine Diseases, presented at the meeting of the U. S. Live Stock Sanitary Association, Chicago, December, 1920.

According to investigations of J. Tram, Good and Schelegel, the cause of porcine abortion is a micro-organism which is physiologically and biologically identical to the B. abortus Bang, and this microbian agent has been designated as the B. abortus suis. According to experimental tests, the intravenous injections into pregnant sows of cultures of recently isolated B. abortus suis promptly produced abortion. Abortions also followed the feeding of virulent cultures of these organisms. Bacilli abortus suis have been isolated from the fetuses and fetal membranes of sows that had been induced to abort either as a result of injected or fed cultures of the B. abortus suis. These experiments would indicate that abortion in sows may be the result of infection with the B. abortus suis; however, it does not necessarily follow that the recent extensive outbreak of porcine abortion was due to this specific infection. In different laboratories, a large number of serologic tests have been made of the blood of aborting sows but the results do not support the theory that B. abortus suis has been the cause of the majority of abortions. There is no evidence to support the theory that B. abortus suis has been the cause of the majority of abortions. There is no evidence to support the belief that there is any relationship between abortion in cattle and in swine. It is possible that the abortion in swine is only secondary to the widespread varieties of microbian infections that occurred in swine in the fall of 1919 and that the condition indicated by abortion is only a sequel of those infections.

An infected animal introduced into a non-infected herd appears to have been responsible for the transmission of the disease to non-infected and otherwise healthy animals and produced widespread abortion in such herds.

The boar may be a mechanical carrier of this disease and may be capable of transmitting the disease into healthy herds and establishing abortion in such herds.

It seems reasonable to assume that the causative factor of abortion may be introduced in feed and water by way of the digestive tract, for it has been repeatedly observed that some sows in a healthy herd become affected and abort soon after an infected sow has aborted.

Abortion occurs most commonly about the third month of pregnancy, although some cases have been recorded much earlier and others much later in the period of gestation.

Few Premonitory Symptoms Shown.

Aborting sows rarely show any premonitory symptoms, but the breeder usually has no difficulty in identifying the aborting sow. In some cases the fetal membranes are not sloughed and their retention may result in septic metritis. All cases in which the fetal membranes are retained have a distressed appearance, arched back, and inappetance. After abortion, there is usually a mucous or mucopurulent discharge from the external genitals. This condition, if untreated, may persist for a period of six weeks, during which time the affected animals lose flesh and may even die of metritis. Because of the lack of any definite knowledge concerning the cause of abortion, it is advisable for all aborting animals to be effectually isolated and maintained in quarantine for a sufficient time to prevent the possibility of the spread of infection. According to farm experience the length of time necessary for such isolation is not less than six weeks, and probably a period of quarantine of two months would be sufficient.

Breeders should use extreme care not to permit the use of a boar on infected animals. Should such occur, however, it would be advisable to disinfect the genital organs of the boar and withhold him from service for a period of six to eight weeks. The one serious consequence of abortion in swine is the occurrence of steriiity. Sterility is a common sequel in a large percent of the cases in which purulent metritis has developed after abortion. Some practitioners have reported that they can prevent the occurrence of sterility by douching with mild antiseptics every second or third day until the discharges from the external genitals cease. Until further definite information is available, all preventive and control measures should be in the direction of improving the sanitary surroundings, quarantining the aborters and using care in the use of the boar.

Conjunctivitis in Swine.

Inflammation of the conjunctival mucosa is relatively common in swine as an associated condition, complication or sequel of other infective diseases, such as cholera, swine plague and infectious bronchopneumonia, but is relatively rare as a primary condition. The following description of porcine conjunctivitis is from information obtained from case reports and observations of affected animals of a condition that, according to history and symptoms, is infectious.

Suckling pigs are most frequently affected and it is not unusual for a large percentage of the

pigs in one lot or pasture to become affected within a few days. In one instance, several sows were affected with the disease and the following season twenty-five of the seventy-five pigs from the same sows became affected with the same disease.

The first symptom manifested is a serous discharge from the eye. A close examination of a pig during this stage will reveal an intense congestion of the conjunctiva. A few hours after the onset of the disease there is a mucopurulent discharge and the conjunctival mucosa will be swollen and show evidence of intensive inflammation. The mucopurulent discharge accumulates upon the margins of the eyelids and may cement the lids together. In extreme cases there may be ulceration of the cornea or there may be a true ophthalmia and rupture of the eyeball.

The disease usually runs its course in from ten to twenty days. The mild cases usually make a complete recovery, in the more severe cases cicatrices are not uncommon.

Treatment: Most cases respond to the topical applications of sterile water to cleanse the membrane after which argyrol is applied.

VETERINARY MEDICINE will be pleased to have reports of other cases of porcine conjunctivitis.—A. T. K.

Anti-Rooting Operation.

The original wild hog subsisted on nuts, vegetation of various kinds and roots. Nature provided a snout for swine that was adapted for rooting. Domestication and the generous supply of food stuffs for swine have not overcome the original instinct of rooting, although the conformation of the snout has been changed by selection and breeding, to a remarkable degree.

Various methods have been devised to prevent swine from rooting, such as ringing and cutting the external tissues of the snout. Either ringing or severing the tissues of the snout injures the tissues, and the animal will refrain from rooting because of the increased tenderness and, fortunately, in the majority of instances they will not resume the habit. Ringing or cutting the snout tissues disfigures the animal, and the operation is usually done after the swine are from 75 to 150 pounds in weight and the surrounding conditions are favorable for infection of the wounds produced by ringing or severing the snout tissues. In many instances, the infection succeeding the operations to prevent rooting becomes serious and requires prmpt attention.

A new method has recently been described to prevent swine from rooting. This method consists in severing the tendon that attaches to or connects with the cartilaginous ring of the nostril. These tendons are located on either side laterally to the nasal opening. The operation consists in severing the tendons posterior to the cartilaginous ring. The operation should be done while the pigs are young, preferably when they are from one to two weeks old. The pig should be held by an assistant, and the operator should grasp the pigs' snout by placing the palm of the hand on the under side of the lower jaw and encircling the snout with the thumb on one side and the first finger on the opposite side. By manipulation, the tendons above referred to can be definitely outlined and may be severed by the use of a bistoury. The operative wound should be painted with tincture of iodin and it usually heals by first intention.

The writer has not observed swine in which this operation has been done, but has been assured that it is successful and is to be preferred to the older methods resorted to in the prevention of rooting.—A. T. K.

Tuberculosis Eradication Work.

(*Continued from page 29*)

pared with the total number of accredited herds, which now exceeds 4,000.

Lack of Funds Greatest Obstacle.

The greatest obstacle confronting the co-operative campaign to eradicate tuberculosis from live stock today is the lack of sufficient state funds for use in indemnifying owners for tuberculous cattle. Much more money must be appropriated to cover this feature. If unlimited indemnity funds were available tuberculosis among live stock could be reduced to a very noticeable extent in a few years. The live stock owners are ready and willing to help do it and are rather impatiently waiting for more rapid progress along this line.

I take this opportunity of voicing the appreciation of the Bureau for the splendid team work that has prevailed in all of the states in which co-operative work is being conducted. As indicated on previous occasions, the tuberculosis eradication campaign is built upon the foundation of co-operation.

This work is a practical exemplification of the effects of true co-operation between live stock owners and live stock sanitary officials. Let us continue along these lines.

Live Stock Poisoning

Edited by L. H. PAMMEL, Ph. D.

Professor of Botany, Iowa State College, Ames, Ia.

Autointoxication

AUTOINTOXICATION is quite as common in man as in lower animals. Dr. Alexander Bryce contributes to *Good Health Magazine* an article on "Self Poisoning As the Cause of Disease," which is well written and serves to make the matter clear to the layman. I am extracting portions of the article on food poisoning. He says: "In Great Britain during this last winter a great many cases of disease with unusual symptoms occurred which suggested that they might be due to some form of food poisoning, and much attention has been given to this extremely interesting subject. For poisonings may arise from the indigestion of most articles of diet and may originate in various ways.

Readers are urged to take advantage of the opportunity offered by Dr. Pammel, for the identification of specimens of supposedly poisonous plants. Two good-sized specimens, carefully packed, should be sent to him direct, with such history as may be available. Simply mention that you are a reader of VETERINARY MEDICINE and no charge will be made for this service.

"We are all familiar with the suggestion that metallic poisoning, generally lead or tin, may arise from the action of acid juices upon the metal of the cans in which various foods are enclosed. But in reality this is not a common condition today, as the manufacture of tinned goods for canning purposes is now almost a fine art, and in any case has been brought to a high state of perfection. It is more common to find poisoning arising from the flesh of animals that have been fed upon plants, harmless to themselves, but poisonous to man, i. e., the flesh of turkeys which have eaten deadly nightshade leaves has caused belladonna poisoning, while grouse and hares have been rendered poisonous through eating laurel leaves.

"Eating the flesh of animals suffering from an infectious disease, such as tuberculosis, is by no means a safe procedure, as the germs of the tubercle are thereby easily transmitted.

"The food may be contaminated with germs gaining admission from infected water, i. e., typhoid bacilli in oysters and milk, or even with animal parasites and their ova; certain organs of fish are normally poisonous and others become poisonous during the spawning season."

Regarding deficiency diseases the author states: "Food lacking in vitamines is now known to produce what are called the deficiency diseases. Even when all the alimentary principles are supplied in more than abundance to provide for tissue growth and repair and the production of energy, disease will arise unless those food accessory factors are included. While not actually building stones, they appear to be the cement binding them together. They are products of the plant world, and it is on plants that all animals ultimately live. These vitamines have been recognized as water-soluble B in the germ and outer husk of grains, and lack of which in rise is the cause of beriberi. Fat-soluble A, to be found in all animal fats, except lard, and derived originally from the green parts of plants, is necessary for growth in the young, and deprivation of this is the essential cause of rickets. Water-soluble C, found in fresh fruits and vegetables, is antiscorbutic. The absence of vitamines appears to present a set of symptoms remarkably similar to those of toxemia.

"Poisonous fungi are rarely found in grain. Most fungi, even some supposed to be edible, are themselves poisonous. The pea family has some relatives which when eaten induce disease."

Of intestinal toxemia the author states: "But the autointoxication which is of most interest to us is that which owes its origin neither to food contaminated before it is swallowed, nor putrefying because of its content of noxious germs, but that which arises from the digestion of food by the bacteria normally

present in the digestive tube. This we have agreed to call intestinal toxemia.

"It is a very remarkable fact that besides the digestion which takes place in the mouth, stomach and bowels as the results of the outpouring of digestive juices, with their appropriate enzymes or ferments, a perfectly analogous process is going on either at the same time or subsequent to the completion of the enzymatic digestion by means of microbes which are the natural denizens of the intestinal canal. The conversion of starch into sugar, the emulsification of fats, the transformation of albumen into peptones, albumoses and amino-acids, is the result not only of fermentation but also of living germs in the intestinal canal.

"This is not an artificial but a natural process and should, therefore, be attended only by a wholesome beneficial action so far as the human body is concerned. Doubtless it was for this reason that scientists so long stoutly maintained the attitude that nothing but good results could accrue from the natural processes taking place in this best of all possible digestive canals. The microbes were there; hence they were not only useful and indispensable, but could by no possible combination of circumstances be anything but harmless.

"But a vast mass of facts has been accumulated which demonstrate that however harmless they may be when kept in their proper place, they can be most poisonous and productive of most harmful consequences when allowed to run riot at their own sweet will. Scientists do not now deny the possibility of harmful consequences. They vie with each other in their efforts to determine the nature of these evil results, and trace them to their proper causes, and in this they may be regarded as having divided themselves into two schools. One of these schools supports the contention that the disastrous effects in the body are due to absorption of the toxins and poisons formed by the bacteria either during their life or after death, while the other subscribes to the view that the germs themselves are absorbed into the blood and are directly responsible for the resultant damage. The position now is not that the scientists cannot find a cause for the autotoxemia, but that there is such a multitudinous number of causes that they have extreme difficulty in allocating any particular damage to its appropriate source. But they are strong on the scent and their quest will be successful in time."

Hoary Alyssum.

Prof. H. T. Darlington of East Lansing, Michigan, writes me as follows, concerning the hoary alyssum (*Berteroa incana*): "I have just received a letter from Dr. Wm. Hansen, Greenville, Michigan, as follows: 'I have sent a sample of weed that was found in some hay. After the horses ate of it, four of them were taken sick with swelling of the legs and stiffness. Will you please inform me whether the weed is toxic, and if it would produce such a result in the horses, and what would be the antidote?"

Reply: The plant, so far as I know, is not poisonous. It is possible that large amounts might cause an irritation, but there are no records of its poisonous nature.—L. H. P.

Poultry Feed Mixtures.

Deficiency Conditions.

The writer, every now and then, receives feed mixtures of various kinds with the statement that they are injurious to cattle, horses, hogs or poultry. In many cases it was impossible for us to locate any poisonous substances. The investigations of B. F. Kaupp and J. E. Ivey* in a "Study of Some Poultry Feed Mixtures with Reference to Their Potential Acidity and Their Potential Alkalinity," may throw some light on the problem. In recent years some work has been done on the acid base balance of dietaries. The authors say: "Sherman has shown that meats and cereals have a preponderance of acid-forming diet eaten for some period of time is fruits and vegetables have an excess of base-forming elements.

"Although the question whether or not an acid-forming diet eaten for, some period of time is productive of undesirable results, is debatable, probably the concensus of opinion is in favor of diets in which the acid-forming and base-forming elements are approximately balanced. The possibility that the continued use of acid-forming diets may lead to a greater susceptibility to disease of the less infectious type has seemed worthy of investigation.

"Grain mixtures as ordinarily used in poultry feeding are acid.

"Mash mixtures containing sufficient quantities of digester tankage, meat and bone meal, dried milk, or dried blood will be base.

"Acid balances of feed mixtures can be overcome by the addition to mashes of dried milk, digester tankage, meat and bone meal, bone meal, dried blood, or ground limestone or oyster shell. Green feed, milk or drink, and limestone and oyster-shell grit also aid in overcoming the acid balance of grain mixtures.

"The following letter from Dr. Harry L. Reiter is of interest in this connection: 'I am writing you for information regarding a condition which one of my clients is experiencing in feeding dairy cattle. These cattle are being fed ensilage from corn cob, corn fodder and also oats straw. I have examined all feeds mentioned above and fail to find anything wrong with them. The owner is careful not to feed moldy ensilage.

"'In the silo, is one spot about two feet square which is unusually hot, and ensilage from this place is fed along with the other ensilage. It is possible that the silage is too acid, causing the intestinal disorder; or is it because of an unbalanced ration?

"'Four cows went "off feed" in one week. They go "off feed" very quickly and seem to suffer a great deal of pain. The condition is treated with barium chloride and tartar emetic 30 gr. each. Thus far, all have recovered.'"

The question, it seems to the writer, may have had something to do with the acid condition of the silage. It is worth investigation. Possibly readers of the Journal may have had similar experiences.

*Journal Agrl. Res. 20:141-149.

Beet Molasses Injurious to Weaning Pigs.

W. E. Carroll conducted an experiment on feeding molasses to weaning pigs with the following results, as abstracted in the Experiment Station Record.*

"This is a brief statement of feeding experiments with beet molasses in which thirty grade Tamworth pigs between nine and twelve weeks of age were divided into three as nearly uniform lots as possible and fed a basal ration of two parts ground barley and three parts wheat shorts. Lot 1 received only the basal ration; Lot 2 the basal ration and 1 lb. of beet molasses for each 100 lbs. live weight; and Lot 3 the basal ration and 2 lbs. of the molasses for each 100 lbs. live weight. Feeding began July 23, and on August 28 two pigs in Lot three died. None of those in the lots fed molasses were as thrifty as those in Lot 1. The first death in Lot 2 occurred September 18. At the close of the tests Lot 2 and 3 each contained only 3 live pigs, while none had been lost from Lot 1. The average live weight of the surviving pigs was 57 lbs. for those in Lot 2 and 47 lbs. in Lot 3, as against an average of 88 lbs. for the 10 pigs in Lot 1.

"The symptoms preceding death were loss of appetite, lack of thrift, and a partial loss of muscular control, resulting in a wobbling and uncertain gait. This muscular weakness sometimes lasted a day or two and then disappeared for a time. There was no scouring in any of the cases. No decided pathological condition was found in two of the cases, upon postmortem examination, but the livers and kidneys were considerably congested.

*43:180 See Trans. Utah Acad. of Science, 1:205.

Three-Flowered Nightshade Poisonous.

Dr. G. A. Smith of Rigby, Idaho, sends a specimen of the three-flowered nightshade (*Solanum triflorum*) with a full account of the symptoms observed by him. The account given by him follows:

"On August 3, 1920, I received a call early in the morning from a client living about five miles from my office. He stated over the phone that one of his horses had died during the night and that another was nearly dead, and wished me to come out at once. The second horse had been dead some time when I arrived. Therefore, I did not get to see any of the symptoms. The owner told me that the animal had great difficulty in breathing and that there was an almost continuous discharge of white foam from the nostrils and mouth. The animals evidently died from asphyxiation, judging from the description given by the owner. When I arrived there was a quantity of white foam about the nostrils that would have filled a gallon pail. The abdomen was not distended with gas.

"*Autopsy:* There was a total absence of pathological changes in the abdominal cavity. On opening the thorax it was found to contain 1.5 to 2 gallons of yellow or yellowish brown fluid. The pericardium and heart were normal. The lungs were normal, except that they seemed to contain more than the usual amount of air and on the periphery of the right lung and on the inferior surface of the trachea there was a yellow gelatinous material of about the density of clotted blood, but perhaps more firm. This extended up the trachea for twelve to fourteen inches. On incision,

the same white foam exuded in large quantities.

"The plant grows profusely in the gardens and among potatoes, and on any ground where the crops are not too thick or the ground is not sodded. The field was mowed on July 24, and the crop was raked and left in the field until about August 1, when the farmer, thinking the collection of weeds and grain might have some food value, hauled two or three loads and placed them in his pasture, and allowed his horses to eat what they wanted of it. The pasture being rather short they seemed to eat considerable of this material with no ill-effect until the third or fourth day, when the horses above mentioned died."

The three-flowered nightshade is related to the European black nightshade (*Solanum nigrum*). The three-flowered nightshade is a native American plant, and occurs on the plains of Nebraska, Kansas, the Rocky Mountains and the Northwest. The common black nightshade occurs from the Atlantic to the Pacific and in the Northwest, is often very common in stubble fields and is known as the stubble berry. I do not think this stubble berry is very poisonous.

The three-flowered nightshade is a low, spreading annual, with somewhat hairy or smoothish leaves, from one to three flowers in a cluster and as many berries. Some years ago I wrote the following note on this plant:

"Prof. Chestnut says experiments on guinea pigs show that the berries are poisonous. No cases of human poisoning have been reported. The berry is not attractive to the eye, but has an agreeable odor and taste. It is, therefore, to be suspected in cases of poisoning which occur in localities where the weed is abundant. The writer has also received complaints of the poisoning by this plant from Nebraska and other western states. The active constituent is, no doubt, *solanin*."—L. H. P.

St. John's Wort Poisonous.

The St. John's wort (*Hypericum*) has long been regarded as poisonous. S. Dodd published a paper on St. John's wort and its effects on live stock reports on the poisonous nature of the plant.* This plant is common in eastern North America. The Experiment Station Record has made the following abstract:

"The experiments here briefly reported show that St. John's wort contains a principle, most abundant in the flower and flowering stems, which, when the plant is consumed by an animal, becomes absorbed into the system and renders unpigmented or white skin peculiarly sensitive to sunlight, with the result that on exposure to the sun such skin in injured, as evidenced by the reaction. The reaction is much more than mere sunburn, especially as the condition is not seen in similar animals exposed to greater sunlight but not fed on this or other skin-sensitizing substances. In addition to the skin affection, St. John's wort appears to exert an effect upon the central nervous system, usually causing great mental depression but at times excitement, which sometimes becomes almost mania."

*Agrl. Gazette, New South Wales, 31:265-272.

Can Bloat Be Caused By Night Shade?

Dr. O. W. Johnson, of Davenport, Iowa, sends the following communication in regard to nightshade and bloat: "Early in the fall—to be specific, September 11—I had a call to a dairy farm where two cows were affected with bloat. The following evening I was called out again for this same reason, two more animals being bloated and one dead on arrival.

"They had just been removed from pasture, watered, and fed some alfalfa hay.

"I went over the pasture and found abundance of wet nightshade. (1) Could the nightshade alone cause the bloat? (2) On subsequent watering? (3) On subsequent watering and feeding of dry alfalfa hay? (4) The alfalfa (dry) hay alone? I advised the owner to keep his cattle out of the pasture, and he did so and had no further trouble. I should like your opinion."

Reply by Dr. Pammel: My own opinion is that the nightshade did not cause the bloat. The black nightshade, it is true, is fairly common in stubblefields and some pastures. I think solanum poisoning would have shown in the symptoms, rather than bloat. Well-dried and cured alfalfa hay should not have caused bloat. Bloat occurs from eating many plants, like white, red, alsike clovers and alfalfa. Bloat has been caused by pigweed in several places. O'Gara, of Nebraska, calls attention to the injurious properties of this species (*Amaranthus retroflexus*). He says that it doubtless causes a great deal of trouble in some parts of that state.

This weed is common in our pastures and may have been present in the pasture you mention.—L. H. P.

Laboratory Diagnosis

Edited by C. A. ZELL, D. V. M.

Hemorrhagic Septicemia in Sow.

I was called to see a sow that was running with three others to be fattened. My client informed me that the sow had been sick for three days and refused to eat, and there seemed to be a cessation of bowel movement; urination seemed to be normal. At times she would run about with the others and at other times she would lie in her bed. I examined her and found no discharge from the eyes. She was a white hog and her skin looked healthy. The temperature was 102.6° F., pulse weak, stomach somewhat distended, respiration normal.

I informed my client that he had let the case run too long, but I would do what I could. I gave three ounces of sodium sulphate, and as my client thought she was impacted and wished me to give her a rectal injection of soapy water; I did so. On withdrawal of the hose I found pieces of slimy mucous membrane adhering to the hose, but not much fecal matter came away, and what there was was thin so I did not suspect impaction. I then had the sow put in a pen by herself, gave her plenty of good bedding and left gentian and nux vomica to be given every three hours. I also left twelve ounces of oil (White Rose Neutral), half to be given in the evening and half in the morning.

On the third day I went out and found the sow's pulse very weak; temperature 101.8°; rectal sphincter relaxed; respiration 60. She could scarcely stand. I told the owner she would die and to let me know when she did so I could post her. She died that night and I posted her the next morning. On incising the skin and adispose tissue, I found small spotted hemorrhages; the large and small intestines hemorrhagic, bluish green in color, distended with gas and with very little fecal content. I could find no volvulus, but much body fluid; liver discolored; lungs hemorrhagic; also on the stomach were small spots like ulcers. The mucous membrane was almost absent in the intestines.

I thought this might be necrotic enteritis. The body was bluish in color.

I am sending you the heart, part of the lungs and liver. Will you give me your diagnosis? The other three hogs are in the best of health, so I do not believe it cou'd be an infectious disease.—O. R. M., Wis.

Reply: B. bipolaris septicus was present in all organs of the sow, the organism not being very virulent. Experimental animals did not succumb to the disease; therefore I think we have to deal with a chronic form of hemorrhagic septicemia —rather slow-going process and less virulent to other more resistant animals.—C. A. Z.

Directions for Packing Specimens for Laboratory Examination

1. Gross anatomical lesions, where a bacteriologic examination is desired, are best sent packed in an ample quantity of borax. A corrugated paper or wooden box is preferable to an air-tight container (can). As second choice, such specimens may be carefully wrapped in cloth, wet in a 10 percent formalin solution, properly boxed.

2. Specimens of tumors or other tissue, not for bacteriological examination, may be sent in a 4 percent formalin solution.

3. Specimens of blood, pus and body fluids for bacteriological examination or for serum tests should be drawn aseptically and sent in sterile containers (small bottles boiled and cooled), air-tight. Such specimens should reach the laboratory quickly. If sent by parcel post, should be sent special delivery. It is best to send blood, pus and body fluids by first class mail, special delivery. If the quantity of pus is small, dilute with sterile normal salt solution to prevent drying. Sterile containers supplied free on request.

***Chemical analyses cannot be furnished free of charge,** owing to the vast amount of work involved.*

Send all correspondence and specimens to Veterinary Medicine, 53 W. Jackson Blvd., Chicago, Ill.

Hemorrhagic Septicemia Organisms Indicate Cholera.

I am sending you two specimens, the one containing lung tissue was from a two-year-old rooster, the other was from a pullet.

This flock has had trouble at intervals for two years. They lose flesh; comb bluish; diarrheic condition; off feed toward the close of the disease, and the trouble seems to be worse among young chickens this fall. I found one nodule which I enclosed with the lung tissue, that I took to be tubercular, but I considered I was dealing with cholera.

What is the extent of immunity from vaccination?—S. R. B.

Reply: A bacteriological examination showed that there were a great many hemorrhagic septicemia organisms present, which indicates that fowl cholera existed among the chickens with which you were dealing.

In answer to your question as to the extent of the immunity after vaccinating for this condition, I will say that I doubt if it lasts over six months. A report on some work of this kind involving over seven thousand fowls in Hungarian henneries, showed that the mortality in the non-vaccinated ones was over thirty-four percent, and in those that were vaccinated, it was somewhat over two percent. In other words, vaccinating with fowl cholera bacterins reduced the mortality over thirty-one percent. The disease was well developed in all of these various henneries where the experiments were carried out. —C. A. Z.

Bovisepticus Infection in Calves.

Am sending some specimens consisting of a piece of the intestines, of lung, and a sample of blood drawn from the heart of a two-month-old calf, with history as follows:

There are four hand-fed calves in this lot. About two weeks ago these calves had a very bad case of diarrhea, and were treated with bismuth and salol. Two of them recovered completely and of the other two, one died on Nov. 14, while the other scours a little at times, but has a fairly good appetite. The one which died had a hacking cough during the last week, had no appetite at all, was much emaciated, and had diarrhea continually.

Postmortem examination revealed almost a complete solidification of both lungs and on sectioning pus could be squeezed out. There was one spot or blotch of hemorrhages on the heart near the coronary band. Scattered throughout the walls of the small intestines were small abscesses.

A diagnosis and treatment for such cases would be very much appreciated.—H. C. F., So. Dak.

Reply: Your specimens were received in rather poor condition, as they did not reach us until after a delay in transit of nine days. The piece of intestines and lung had suffered as a result of this delay, so that they arrived in a shriveled and dried up state and no successful bacteriological examination could be made. The blood in the syringe showed bacteria which were typical of Bacillus bovisepticus. It consequently appears to me that in all probability you have to contend with the bovisepticus infection in the calves, and the treatment indicated is a bovine hemorrhagic septicemia bacterin, or possibly, better still, an autogenous bacterin made from the bacteria that are causing the trouble in the calves of that particular herd.—C. A. Z.

Tuberculosis Not Indicated.

I am sending you a section of liver taken from an emaciated fall pig, which had been treated for worms several times without improvement. Feeds were changed, and still no physical change was apparent. Postmortem lesions were confined to the liver. Seventeen ascaris were found in the small intestines; several in the bile duct. All other organs were normal in size with the exception of marked anemia. The pigs were allowed a liberal amount of skimmed milk from non-tested cows. While the liver is not enlarged, as is generally the case in tuberculosis, its pathological appearance indicates the presence of the disease.—S. K., Ill.

Reply: A bacteriological examination of the liver lesion did not show any tubercle bacilli.—C. A. Z.

Staphylococci and Saprophytes.

This specimen is from a fat steer that was slaughtered yesterday for human food. On visceration an abscess was noticed on the liver. The remainder of the carcass and viscera was normal. Please give us your findings on the pus examination.—I. C. B., Iowa.

Reply: Bacteriological examination failed to show any tubercle bacilli, but there were a number of staphylococci and saprophytes present.—C. A. Z.

Negri Bodies Present.

Am sending by special delivery a dog head for examination for rabies. Kindly examine and let me know the results. Several individuals have been bitten by the dog.—A. J. W., Virginia.

Reply: Examination of the brain showed the presence of many negri bodies, which is diagnostic of rabies. Individuals who were bitten by this dog should at once begin taking the Pasteur treatment as a preventive against rabies.—C. A. Z.

Parasitology

Edited by MAURICE C. HALL, Ph.D., D.V.M.

USES AND LIMITATIONS OF SANTONIN.

SANTONIN is a glucoside, $C_{15}H_{18}O_3$, obtained from santonica, or Levant worm seed. This Levant worm seed is the dried, unexpanded flower head of *Artemisia pauciflora,* a plant belonging to the Compositae, the large group of plants in which the flower head, which gives the impression of being a single flower, is really made up of numerous small flowers. Such familiar flowers as the dandelion, sunflower and daisy are made up in this way. The plant grows in northern middle Europe and in Asia, the principal source of our santonin supply being a firm in Turkestan, which firm has been out of operation since some time during the war, a fact which accounts to some extent for the present high price of santonin, which is quoted at $11.70 an ounce. Santonin is considered in this paper as an anthelmintic only, its other uses being ignored. This drug has been for a great many years the classic drug for use against ascarids, both in human and veterinary medicine, but the evidence of the fact the last few years indicates that it is only indicated in ascariasis under certain conditions and that its greatest value is in other conditions.

How should santonin be administered? In repeated doses; a given amount of santonin appears to be more effective in divided doses than in a single dose. It is usually given with an equal amount of calomel, and this practice appears to be sound. It is usually given in pill or tablet form, and this appears to be satisfactory.

Against what worms is santonin useful? It is the drug of choice for the removal of whipworms from the dog and from man. The reason for this is that whipworms require repeated doses of anthelmintics to insure their removal, since removal depends on the entrance of the drug into the cecum, where the worms are usually situated, and this is something that one cannot be sure of for any one dose, but something that will be reasonably certain in the course of a number of doses. Where repeated doses are to be given, the drug used should not be a gastro-intestinal irritant, and in this respect santonin is superior to almost all of the other anthelmintics that might be used.

In 1918 the writer recommended santonin for the removal of whipworms from dogs, the drug to be given in one-grain doses, with an equal amount of calomel, daily for a week, treatment suspended for a week, and then the treatment repeated for a week. For small, weak or young animals, half-grain doses, or even less, might be used.

In this connection it is interesting to note that Miller, in a paper in the November number of the Journal of the American Veterinary Medical Association, has reported that he failed to remove whipworms from dogs by the administration of several doses of chenopodium and that the effects on the dogs were very bad. I had previously pointed out in a paper in the same journal that repeated doses of chenopodium were not well tolerated, owing to the irritant nature of this drug. Miller concludes from his experience that the only way to treat dogs for whipworms is to operate and remove the cecum. Some years before, the physicians Berard and Vignard had come to a similar conclusion, namely, that it is necessary to remove the appendix to free a patient from worms in the appendix. On the other hand, the Japanese physician, Matsuoka, in an excellent study of the low-grade inflammation present where whipworms occur in the appendix, concludes that in this condition an operation is not indicated and that medicinal treatment should be used. In this I agree with Matsuoka. Numerous observations in connection with whipworm infestations found among several hundred dogs examined postmortem, indicate beyond question that a low grade inflammation is frequently present in the cecum at the point of whipworm attachment and is due to these worms. However, numerous experiments with repeated doses of santonin and calomel indicate that such a treatment constitutes a reasonably effective means of removing whipworms, and it appears to be much simpler and safer than a major operation and quite as effective. In either case, prophylactic measures are necessary to prevent

reinfestation. Where a few whipworms are present, they are practically always attached at the tip of the cecum correspondingly; when large numbers are present the infested area is extended, sometimes to the limit of the cecum and sometimes along the colon to the rectum. The continuity of the zone of infestation is a peculiar thing, perhaps associated with the permanent and rather firm attachment of the worms, which make such physical proximity necessary to insure the fertilization of the females by the males.

The limitations of surgery as a measure of relief from whipworms are these: The operation will remove all worms present in the cecum, but the removal of the cecum will not affect the worms attached in the colon, in heavy infestations; and there is no reason to suppose that a dog cannot become infested with whipworms after operation for removal of the cecum, the worms developing in the colon. In this connection it is worth noting that Japanese investigators have found that whipworms also have the habit of wandering through the body from the digestive tract after escaping as larvae from eggs which have been swallowed, which wandering habit has previously been reported for hookworms, *Strongyloides* and ascarids among nematode worms. There is little or no reason to doubt the ability of these worms to develop in the colon on their return to the digestive tract from their larval wanderings. In a dog from which the cecum had been removed, the whipworm infestation of the colon might then be controlled by the removal of the colon or the use of drugs, and it would probably be easier to remove by anthelmintics, the worms from a dog without a cecum, but on the whole the use of santonin and calomel seems to be a better treatment.

Santonin for Ascarids in Dogs.

Aside from whipworms in dogs, the only other worms of domesticated animals for which santonin seems indicated are ascarids in dogs, and these only under conditions where it is advisable not to use chenopodium. Such conditions are present where there is an existing gastro-intestinal irritation; here repeated doses of santonin may be used to accomplish the results that would be accomplished in removing worms by a single dose of the more irritant chenopodium. It is the writer's impression that santonin is somewhat safer than chenopodium, but the evidence on this point is conflicting. In the case of animals showing febrile conditions, as in distemper, or debilitated, as in mange, no anthelmintic can be regarded as safe. For pups santonin is probably safer than chenopodium, but Winslow warns against the administration of santonin to pups under two months old. Where santonin is to be used to remove ascarids from dogs, it should be used in doses of a half-grain to a grain daily, with an equal amount of calomel, for a week, the treatment being discontinued as in the treatment for whipworms if the animal reacts unfavorably.

Against what worms is santonin not useful? Santonin is of no value against flukes and tapeworms and against such roundworms as hookworms. It is probably of no value, though there is little experimental evidence on this point at present, against any of the strongyloid or bursate nematodes, such as the stomach worms of sheep, nodular worms, palisade worms of horses, and other strongyles and trichostronglyes. Its value as regards spirurid worms in the stomach, trichinae and hairworms in the small intestine and other nematode worms in the digestive tract is problematical and would require experiment to determine.

What is the place of santonin in dog practice? This question has already been answered in the foregoing portion of this paper. In veterinary medicine, santonin finds its greatest utility in dog practice; it is the drug of choice for the removal of whipworms and is indicated where it is essential or advisable to void gastro-intestinal irritation in removing ascarids. It is useless against hookworms, tapeworms or flukes.

What is the place of santonin in swine practice? In the writer's opinion, none, providing more efficient drugs are available. It is distinctly inferior to chenopodium for the removal of ascarids from swine, as all critical tests show. If administered, as it usually is, in a single dose in feed, it fails to develop the efficacy it would probably develop if given in repeated doses directly to fasting animals, but to give it in repeated doses and not mixed with feed involves a big problem in restraint, as swine are perhaps the most difficult of the domesticated animals to handle; they are strong, built in a way that makes them difficult to hold, usually dirty, and noisy to the point of irritation. Direct dosing is usually the most effective and if swine are to be handled and dosed at all, one dose of an effective anthelmintic is indicated. Whatever drug is used, the method of administration by capsules and ballinggun is dangerous, as the writer has pointed out in the December number of this journal, owing to the danger of the capsule lodging in the retropharyngeal recess. Santonin has been used so long in swine practice that it has the weight of tradition behind it, but the traditional weight is

not supported by careful experimental evidence. It is also common practice to combine santonin with areca nut for worms in swine, a much-used formula being as follows: Santonin, 2.5 grains; calomel, 2.5 grains; powdered areca nut, 1 dram; sodium bicarbonate, 0.5 dram; this is the dose for a 100-pound hog.

Hall and Foster, in tests of santonin and of santonin and areca nut according to the formula given, found these drugs inferior to chenopodium. Mote has since published experimental findings which are in agreement with the findings of Hall and Foster, though Mote's paper does not give the amounts of drugs or other factors of the experiment. It might also be noted that areca nut finds its greatest usefulness in the removal of tapeworms, and has but limited value against roundworms. In view of the fact that swine do not have tapeworms, as a rule (there are not more than a half dozen records of tapeworms from swine, and these deal with worms which are not fully mature or which are under suspicion as being probably tapeworms of sheep or other animals of which the infected intestines had been eaten by the swine), there appears to be less reason for giving areca nut to swine than to any other of the domesticated animals. If it appears in the formula given above for its purgative value, it is apparently redundant and wasteful, as purgation can be secured more surely and more cheapely by an adequate dose of calomel.

What is the place of santonin in sheep practice? In the writer's opinion, none. Ascarids, which are amenable to treatment with santonin, are apparently only present in sheep as accidental parasites. The bulky ruminant stomach, in which drugs are diluted, interposes a barrier between the mouth and the intestine which is best crossed by bulky drugs and such as are very powerful or administered in solutions, rather than by weaker drugs given in amounts of a few grains. It is unlikely that santonin could be given in effective doses against any of the sheep nematodes at less than prohibitive cost, and it is probably of no value against stomach worms, hookworms or nodular worms.

What is the place of santonin in cattle practice? As in the case of sheep, and for the same reasons, which are even more potent in the case of cattle, none.

What is the place of santonin in horse practice? Apparently none. The ascarid of the horse is an extremely difficult worm to remove. It is not only resistant to santonin, but does not yield readily to the more powerful chenopodium, and the only drug so far reported on for its removal as dependable on the basis of critical test is carbon bisulphide. Santonin is probably of no value against the palisade worm, *Strongylus*, or the cylicostomes. While the drug might exert an anthelmintic action on pinworms, the cost of the drug, in the amount necessary to pass to the colon and produce results in the gallons of diluent present there, would probably be prohibitive.

What is the place of santonin in poultry practice? This is a matter that requires investigation. So far as we have evidence, it would appear likely that repeated doses of santonin might be expected to remove heterakids from the ceca of birds, precisely as they would remove whipworms from the cecum of the dog, but it is seldom safe to rely too strongly on the findings with one kind of worm in one kind of animal for conclusions in regard to another kind of worm in another kind of animal. Chickens would appear to be quite tolerant of santonin, and Kaupp states that a dose of two grains is necessary for the best results.

In human medicine, santonin appears to be the drug of choice for the removal of whipworms; it may be indicated in the treatment for pinworms, which are often difficult to eliminate and where repeated doses of anthelmintics are necessary; and it is sometimes indicated in the treatment of ascarids, where gastro-intestinal irritation must be avoided.

As regards ascariasis in man, the following points may be noted: As early as 1888, Lutz emphasized the fact that in administering santonin to remove ascarids one must not be satisfied by the mere fact that worms are passed, but must assure himself that no worms are left, a result that can be attained only by the administration of santonin for several days. Bruning advises that repeated doses be given where santonin is used, but prefers chenopodium; Houghwout and Horrileno state that they are placing less and less reliance on santonin and that they find chenopodium satisfactory; Gockel finds santonin less reliable against ascarids than is chenopodium, and thinks chenopodium is less toxic; Steber reports a case of ascariasis which failed to respond to santonin and calomel, but which was effectively treated with chenopodium. Kantor has advocated the use of the duodenal tube in administering anthelmintics, and has given 12 grains of santonin to man in this fashion. This technic does not appear to be suitable for veterinary medicine; our patients are not so tolerant in some respects as the human animal.

Queries and Answers

Symptom Analysis

While queries in this department are referred to some of the most efficient veterinarians in the United States, mostly to specialists—gifted to be sure—gifted with a good education, long experience, keen intellect and the power of symptom analysis, yet it must not be inferred that these men are gifted with clairvoyant powers. We note they do not make any such claims; hence no one should assume such for them.

When sending in a request for a diagnosis with or without treatment, you should mention the species or breed of the animal, approximate or exact age and weight, *complete* history of the case, previous diagnosis and treatment, result of treatment, then the symptoms in *detail* in a systematic manner. When writing, picture the animal in your mind and begin at the head, giving first all symptoms connected with the head, this will prevent your omitting to tell us the condition or appearance of the eyes, carriage of the ears, pulse, character of nasal discharge, if any, appearance of nostrils, if abnormal, and would suggest the condition of the respiratory apparatus.

Next, describe any malcondition of the trunk, fore limbs, hind limbs, etc., and give the temperature, also the animal's general appearance and posture should be noted.

Do not forget to mention the condition of the appetite, urine and urinary apparatus and bowels.

Oftentimes in symptom analysis, a diagnosis can positively be made, or rather correct differentiation be made, on one confirmatory symptom.

For instance, the query (which appears in this issue), which prompted this editorial. A veterinarian wrote us in regard to a case of recurrent partial paralysis of the fore limbs of a horse, desiring diagnosis, etiology and treatment. He gave a very good history—stated that the horse weighed about 1,600 pounds, but did not give the age—this latter omission alone makes the suggestion of dosage in the treatment, more difficult. He says he made a tentative diagnosis of brachial thrombosis, as the cause of the condition and desires to know if we think he is correct. As before stated, the patient is without doubt suffering from recurrent partial paralysis of the fore limbs. He suggests brachial thrombosis as the cause and wants to know if we think he is correct; yet he failed to note the *one* symptom that would make a positive diagnosis possible—he does not tell whether the legs, during the attack, are normal or cold, or whether the horse sweats during the attacks. See the point? If cold it would point unmistakably to "thrombosis"; if normal it would eliminate thrombosis and narrow us down in our analysis to pressure (by some form of neoplasm or exudate) on the brain or spinal cord. If he had described the condition of the eyes and mental condition of the animal during these attacks, it would aid us in narrowing our analysis or diagnosis down to *either* the brain or spinal cord; thus, if he described hyperemia of one or both eyes or rolling of the eyes or unilateral pupillary contraction or dilatation, we would feel that the seat of the trouble was in the brain. In the absence of these symptoms and with normal warmth of the affected legs we could arrive at *one* conclusion only—that the seat of the trouble was in the spinal cord and we could, if necessary, approximate what portion of the cord or brain the cause was located in.

Assuming that symptoms of brain or spinal trouble were absent on account of not being mentioned, and again having to assume that the limbs during the attacks were cold, but was overlooked, we are forced under these circumstances to agree with the diagnosis of thrombosis, though disagreeing with the doctor in the location of the clot, as it would be unusual indeed to have a clot form in both brachial arteries at the same time.

Like the veterinarian in the field, we are forced to "straddle a bit," by mentioning the possibility of the condition being due to a lesion of the spinal cord, some condition which, due to the increased circulation of the blood under exercise or excitement, causes an obstruction to its flow through the cord and whether partial or complete, is sufficient to cause enough pressure on the cord to create the symptoms described.

A diagnosis is arrived at by symptom analysis just as the name of any unknown poison is as-

certained by chemical analysis. The chemist, to make a correct analysis (diagnosis) must have the proper reagents at hand (these correspond to our knowledge of etiology), and he must know what reaction will take place between his reagents and certain other chemicals (this corresponds to our knowledge of the effect of the etiological factor on certain tissues—the effect or symptoms).

Some symptoms of commonplace ailments, through experience we are able to analyze quickly, easily or mechanically, just as the chemist may do with some commonplace and readily determined poison like arsenic; while with rare poisons or mixtures he will have to use a number, perhaps a great number, of reagents and very carefully weigh each reaction before being able to arrive at a definite conclusion as to the nature of the substance or poison, as the case may be. So we also, in the more abstruse or difficult cases, must consider and weigh many symptoms and etiological factors and by exclusion, as well as inclusion, if all proper reagents (symptoms) are at hand, will be able to arrive at a correct conclusion (diagnosis).

The above comments we hope have sufficiently demonstrated our needs, so that in the future you will "help us" to "help you," which is our earnest desire.—E. L. Q.

Pyrethrum Powder as Lice Remedy.

I have been treating a horse for about four weeks, for what I thought to be lice as he had been kept in a stable where chickens roosted. I could find no lice and the remedies I have used have done no good. The horse seems to itch more or less all over the body, and has rubbed the hair off in several places.

Also I have a nice Llewellyn setter, one year old that is very gun-shy. Would this fault be transmitted to her puppies?—G. A. F., Va.

Reply: From your description we believe the trouble is undoubtedly due to chicken lice. They are exceedingly small and difficult to see. Am sorry you did not mention the remedies which you applied. However, you will find powdered pyrethrum flowers, commonly known as Persian insect powder, to be a splendid agent.

This powder should be procured from a thoroughly reliable concern. It should be applied by placing it in a sifter-top box, such as a large salt shaker, rubbing the animal's coat with the hand or combing it the wrong way and dusting the powder on to the skin freely, then, either the horse should be removed from the danger of reinfestation, or in other words from the chickens, or you should give instructions leading to a thorough cleaning up of the premises and the destruction of the lice on the chickens.

In treating the chickens be sure to dust them freely under the wings with this powder, and if you get the pure article it is absolutely harmless.

The pups from the gun-shy setter will not necessarily be similarly afflicted, provided they are properly trained.—E. L. Q.

Sweating Due to Disturbance of Vasomotor System.

I have a case on hand for which I wish you would give me a diagnosis and treatment.

Subject: Black mare, four years old, weight 1,600 pounds.

Symptoms: Sweats almost continuously whether working or standing in the stable or when tied outdoors. She sweats at light work when her mate does not sweat at all. She tires a little quicker than her mate but not much. When she is brought in from the pasture and put in a cold stable, she sweats while other horses shiver. Her temperature, pulse and respiration are normal. She would urinate twelve to fifteen times a day while working last fall with no symptoms of pain in the region of the kidneys. She is a little nervous but not nearly so much as her mate. She eats and drinks well; bowels in good condition.—W. A. S., Ill.

Reply: Your patient is suffering from a disturbance of the vasomotor system which accounts for both the excessive sweating and the diabetes insipidus which you say existed last fall but which we infer has ceased by now; although the latter may have been due to some food conditions, such as dusty or moldy hay or some other defective food.

Treatment: Atropin sulphate is of great value in this condition, acting as a vasoconstrictor and as a sedative to the nerves of the sudoriferous glands (anhidrotic). Administer it to your patient in about one and one-half grain doses in solution, orally, or one grain doses, hypodermatically, three or four times daily.

It might also be helpful to administer Fowlers' solution in five or six dram doses in the feed or water three times daily.

If the mare has a long or very close coat, she should be clipped. Feed grain twice daily and bran mash containing one or two tablespoonfuls of salt, once daily. Zinc oxide in two to three

dram doses (the larger dose for your patient), three times daily also gives splendid results in hyperhidrosis. It may be administered in the feed.

Another drug acting especially well and commonly used in human practice to control the exhausting night sweats of tuberculosis is agaricin, the dose of which for the horse is ten to twenty grains, three or four times daily.

Unfortunately, the latter drug is somewhat expensive and at the present time difficult to procure, or should the two first suggestions fail and you cannot find any agaricin you might be able to purchase agaric (from which agaricin is extracted).

The dose of the latter in powdered form for the horse is from one to two drams every three or four hours. It is somewhat irritating and should be diluted with some non-irritating powder.

When you have finished with this case we should be pleased to have you send us a complete case report of it.—E. L. Q.

Removing the Bray and the Bleat.

I would like to know if there is any way that a jack can be stopped from braying. We have a city ordinance prohibiting the standing of studs and jacks within the city limits unless they do not bray.—P. V. N., Iowa.

What is the technic for removing the bleat in goats?—P. L., Colo.

Reply to both queries: Attempts were made in the French army to muffle the bray of mules used for transporting supplies to the front trenches, but none of these attempts were entirely successful. The one that produced the best results was resection of the floor of the false nostril. That is, the double fold of skin that separates the false nostril from the nasal cavity was entirely removed. I have had conflicting reports as to the benefits derived. Some have claimed that the intonation was satisfactorily modified while others said it did not help much. While I have had the opportunity of seeing mules thus operated upon, it was never my fortune to be about when one of them brayed. The effect of operations which fix or remove the vocal cords is of course well known through the many equidae operated upon for roaring. After this operation the whinny in the gelding is changed into a kind of effeminate giggle, while in the stallion it becomes a coarse guttural gurgle, both of which are more offensive than the normal sound.

We have tried to modify the crow of the rooster by snipping a number of short slits into the end of the larynx and then curretting the upper end of the trachea and larynx with a view of stopping the vibrations of the throat by producing a cicatricial rigidity of this end of the "trumpet." The pay for our labor was a sickening shrill tone that made the normal crow of a rooster sound like music.

As regards the bleat of goats we have had no experience but believe that resection of the vocal cords would modify its shrillness enough to possibly satisfy the querist's client.

In short, the voice of animals can be muffled but not dumbed. It must be remembered that the vocal apparatus is a very complex mechanism, comprising the abdominal muscles, thorax, thoracic muscles, lungs, trachea, larynx, pharynx, mouth and nose. Sounds are made by air driven up the trachea into the vibrating and sonant structures above, and since these include about everything from the neck forward in both digestive and respiratory routes it is plain that no magical touch of the knife will modify the function of the apparatus as a whole.

Castration while the animal is young has more influence in changing the character of the voice and the inclination to use it than any other operation.—L. A. M.

Operation to Remove Obstruction to Sight.

A client who breeds and feeds Chester Whites, recently asked for advice in regard to operating for blindness in two valuable sows.

Upon examing these animals, I found that the eyes were all right, but that the animals could not see because of a roll of skin, fat and cartilage at the base of the ear, just over the eyes, which projected out and over, forcing the eyelids down over the eyes, so that the animals were unable to see except through a small slit.

I am wondering if this so-called roll could not be removed in the form of elliptical piece about two inches long by one inch wide, the free edges being then sutured together, thereby leaving the eyelids free to raise to the normal position.

Do you know whether such an operation ever has been attempted? If so, with what success.—F. M Mc., Mich.

Reply by DR. KINSLEY: We do not know of this operation having been performed; however, it sounds reasonable and we would advise that

you try it. It may be that some of our readers have performed this operation and if so we would be glad to hear from them with reference to it, or any other operation which accomplishes the same purpose.

Potassium Iodide for Brachial Thrombus

I was recently called to see a bay gelding weighing 1,600 pounds, which was being used in corn husking. While being driven to the barn, he suddenly went down.

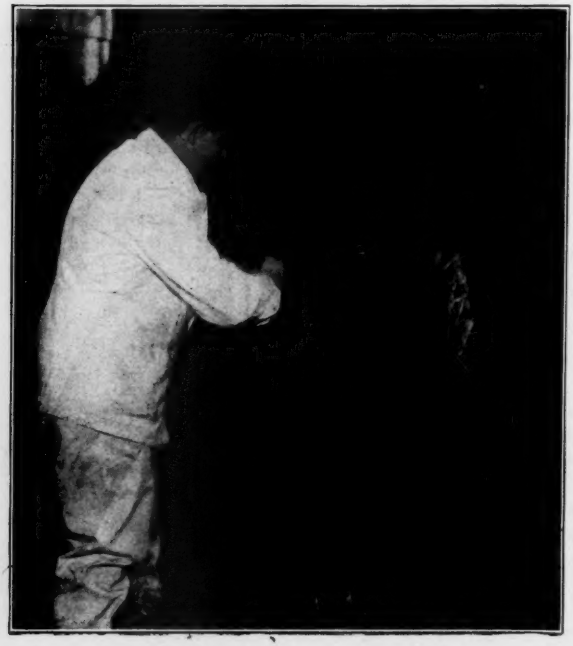
Upon my arrival I found the patient down in a field. With the exception of a slightly accelerated pulse, the animal seemed normal in every way except when he attempted to get up—he would rise on his knees, get up on his hind legs and fall over forward. He ate and drank heartily.

I made a tentative diagnosis of brachial thrombus, and gave a cathartic and stimulant; blanketed the patient and instructed the owner to let him remain where he was for the night.

The next morning the patient was easily raised to his feet with the aid of a block and tackle, and within a half hour was walking about, eating and apparently normal. The third day afterward, the horse lay down to roll and had to be raised again. On the fifth day the owner observed the animal roll and get up alone at the second attempt. On the sixth day he went down twice and had to be raised. Each time he seemed to grow worse. Every two or three days he would lie down and have to be raised. He runs on pasture during the day, eats well, and seems normal in every way, except for a slight coordination of the front legs, which becomes more noticeable as the case progresses.

The patient has been on a tonic of iron, arsenic and strychnin. The effect of this trouble is beginning to show on the patient as well as the owner, who has become disheartened over having to call in neighbors to assist in raising the animal every few days. I have persuaded him to keep the patient for a time, and I would appreciate any information from those having had experience with such cases.—S. W. H., Ill.

Reply: We believe your diagnosis of thrombus is correct, but we cannot be sure of this as you omit giving us a most important feature of the symptoms and that is, you do not state whether the limb or the limbs become cold when the attack is at its worst. If we knew that this coldness of the extremities existed we would be sure of your diagnosis, with the exception that we think the clot is more centrally located rather than in the brachial arteries, as from your de-



Relieving Dumb Animals of Pain.

Treating a sick horse in the dispensatory of the New York Women's League for animals, which is supported entirely by popular subscription and does much to relieve suffering among animals. This horse is unable to rise, and the doctor is administering a pill to furnish strength.

—Photo from Wide World Photos.

scription both limbs are affected and it would be rare indeed for a clot to be present in each brachial artery. However, in the main we believe your diagnosis is correct.

There is another possibility, however, as to the cause of your patient's condition, and that is pressure on the motor area of the brain affecting the area in which reside the centers controlling locomotion of the front legs, or pressure on the spinal cord. However the coldness of the extremities should decide the diagnosis on this point.

If the condition is due to thrombosis, treatment is rarely of any value. However, the only drugs that would be of value would be potassium iodide in 2.5 dram doses, administered three times daily in conjunction with about the same dose of ammonium carbonate. If you decide the trouble is due to pressure on the brain or the spinal cord administer the potassium iodide only.—E. L. Q.

A Fine Point of Law.

I have a case, out of the ordinary, involving the law, that I would like information on. I have Hemenway's Veterinary Law, but I do not know whether I am bailee, agister, farrier or what.

A client of mine bought a team of mules last winter for $600, paying $350 cash and giving a mortgage for $250, due Dec. 1, 1920.

Nov. 14 the client left one of the mules in my barn with a bad foot from a nail that he had stepped on. Nov. 25, the client was in my office and I told him I thought the mule would be well enough for him to take home about December 10. We agreed upon the fee that I thought would be fair the day he left the mule. The mortgage was held by a bank in another town that dealt in stock as a side line. On Nov. 29 the mule that was left at home became tangled up in his harness in his stall and hung himself, and the owner found him dead the next morning.

Cotton is the main crop in this section and many have mortgages on their crop so large that it leaves the grower nothing to gather it. Prices are away off on everything hereabout, crops, cattle and horses. This client went to the bank and told them to take his cotton and the one mule. Now, this one mule will not bring $250 at present prices. On Dec. 13, the bank sent the sheriff to get their mule. The client has less than nothing, so there is no use looking to him for my fees. The bank officials say they had nothing to do with this man bringing the mule to me for treatment. If he sold me the mule or let me have him in any way it was my lookout, not theirs.

Sheriffs out this way seem to have a little more authority in this part of the country than where I came from, or else it's more "nerve."

As a similar occurrence is likely to happen again before another crop comes in, my query is as follows: Suppose I had put a lock on this stall, set my shotgun by the door and dared any man to take the mule out, would I have been in the right if something serious had happened?

There is any amount of mortgaged stock throughout this section and a negro's word is not always good. A horse comes in with the colic in the night, especially intestinal flatulence, and one has not the time to look up the records, because the chances are the horse would be dead by morning. Can one hold mortgaged stock under these circumstances?—H. L., Okla.

Reply: Relating to the case of the team of mules, will say that you lost your equity in the mule when you permitted him to leave your premises. Your only claim now is against the alleged owner, the mortgagor and not the mortgagee. Had you resisted the taking of the mule by the sheriff, he would have had to sue out a writ of replevin and before serving this the bank or the sheriff, according to individual state laws, would have had to put up a bond, which would have more than covered the amount of your claim. The question of how much this would have secured the payment of your bill is problematical as your claim is clearly against the one who brought the mule to you and not against the bank, as mortgaged property cannot be attached except upon foreclosure of the mortgage by the mortgagee and then should a surplus remain and had you previously sued your client and got judgment, then and only then could you attach any surplus moneys or property, after the mortgagee had been paid in full.

Regarding your second query relating to the resistance to the authority of the sheriff, will say that we cannot answer that, as it would depend entirely on the laws of Oklahoma, although we believe that you would, even in Oklahoma, have the right to defend your property to the limit, although, personally, for the sake of a few dollars we would not recommend manslaughter.

Regarding your query and suggestion that on account of so much of the stock in your locality being mortgaged and that you cannot tell when a patient comes to you whether you are going to be able to collect for him or not, will say that we can offer only one remedy for that which we practice in our own hospital and that is: If the patient appears at all doubtful as to the outcome or it appears that he will not be worth the bill, we demand a substantial advance payment, or we do not permit the patient to come into the hospital.—E. L. Q.

Dehorning of Goats.

Is it common practice to dehorn goats and what is the proper procedure?

I lost my nerve when I examined the head and found how much I had to take off to get the horns off.

This may seem like a foolish question but it is the first time the problem has presented itself to me.—L. A. D., Ill.

Reply: Yes, dehorning of goats is occasionally performed. In the adult goat it is performed by means of a hack saw, as the horns as a rule are too dense to use the dehorning device, as used for cattle.

In the very young goat at the time the horns are sprouting, the horn core may be killed by painting with a saturated solution of caustic potash or caustic soda. This is allowed to remain on for a few minutes or until the horn core becomes pulpy, then, the mass is scraped out with either a knife or better still the sharp edge of a piece of broken glass. A saturated solution of chromic acid may be used instead of the above agents. In either instance, however, cover the adjacent skin and hair with a thick layer of petrolatum, as these agents are intensely destructive.—E. L. Q.

E. Wallace Hoare, F.R.C.V.S.

It is with great regret that we note the death of Mr. E. Wallis Hoare, as thereby the veterinary profession has lost one of its most enthusiastic workers and one whose every thought was for its upward progress. The death occurred November 26, 1920, at his residence in Cloverhill, Blackrock, Cork, Ireland.

Graduating at the New Veterinary College, Edinburgh, in 1886, he became a Fellow in 1892, and occupied the position of examiner to the Royal College of Veterinary Surgeons from 1901 to 1910. Previous to obtaining the British diploma he had studied veterinary medicine in the McGill University, Montreal, and the American Veterinary Medical Association subsequently did him the rare honor of election as an honorary member. A keen and observant correspondent on all matters of clinical interest, and a very busy practitioner, it was simply astonishing how he found time to do all he did; and it is to be feared that the tax he imposed upon himself had a great deal to do with his early death. To most men, to be the possessor of one of the finest and largest veterinary practices in Ireland, with a model infirmary carried out on modern and up-to-date lines, would have been sufficient; but to Wallis Hoare this was only the starting point and just something with which to fill in the day. For his recreation he still took up veterinary work and devoted his spare time to literature and the teaching of the student. His work in the latter direction was recognized by his appointment to a lectureship in the University College, Cork, and to the positions respectively of examiner in class B to the Royal College of Veterinary Surgeons and of veterinary toxicology, jurisprudence and sanitary law in the University of Liverpool.

Of his writings, the third edition of *Veterinary Therapeutics* and his *System of Veterinary Medicine* will remain for some time to come as standard works, and as if that was not sufficient, he held for some time the editorship of a weekly paper, the *Veterinary News*. His opinion as a consultant was much sought after by his brother practitioners, and in the witness box his evidence was frequently seasoned with true Irish wit.

On the subject of the use of anesthetics in veterinary practice he was an authority, and to the study of this he had devoted much time and money; the adoption of the Junker principle of the administration of chloroform vapor to horses being one of his particular studies.

With the true Irish temperament of love of an argument, he was always ready to enter the lists in the correspondence columns of our papers, and it was "woe betide" a correspondent who left a weak spot in his armor, for Wallis Hoare was sure to find it—to the eventual mutual benefit of the writers and the profession.

Sound and earnest in his principles, and always working for the good of his profession and the cause of humanity in animals, his death leaves a blank which will be hard to fill; and for hard, honest work his life has been an example which our younger members of the present generation will do well to imitate.—*"Veterinary Journal."*

Pointed Opinions on Live Topics

By READERS of VETERINARY MEDICINE

Care of Stock Hogs

ONE of the most progressive and thriving industries of the corn-belt farm is that of feeding stock hogs. The corn-belt farmer finds it cheaper to buy stock hogs from states that do not raise enough grain to feed out their produce of hogs and where land is so low in value that the hogs may be given a large range while growing to the feeder size.

Bureau regulations require that all hogs passing through public stockyards be vaccinated against hog cholera before leaving the yards. There is no doubt as to the efficacy of this regulation. Many farmers know little of the care of recently immunized hogs. After immunization the hogs are placed in a car and oftentimes two days elapse before they arrive at their destination, where the care they receive the first two weeks often determines whether the farmer is to make a profit or whether he will be forced to take a loss.

> It is in reports like those of t' is department that the current history of the progress of veterinary science is written. Are you leaving a record of your experience which will help others, as you have been aided by these and other clinical reports? If not, you are earnestly invited to contribute from your experience that this department may be of the greatest service to its readers. By so doing you will earn the lasting gratitude of those who are aided by your suggestions.

The chief factors involved are the care, feed and management and sanitary surroundings after arrival on the farm. Every veterinarian should be thoroughly conversant upon these matters, as he is frequently called to treat such hogs under conditions where these factors are of more importance than the diagnosis of any one particular disease.

Last year there were some 40,000 stock hogs shipped into Iowa. The loss was approximately 5 percent, the greater portion of which occurred a short time after arrival at the farm. Many times the veterinarian is consulted, and after clinical examination and autopsy the disease is hastily diagnosed as hog cholera. Here we are confronted with the fact that hogs which have been recently immunized, and more especially those in which the process of attaining immunity is taking place, invariably show lesions of hog cholera on autopsy. Many veterinarians immediately consider it a "break" without taking into consideration that the hog's journey since leaving his old stamping grounds has been anything but comfortable and in addition he has been fed and water irregularly and subjected to untold infections.

Consequently revaccination of these hogs has proved by reports which we receive on each shipment to give a very small degree of success in reducing the loss. Very rarely the veterinarian who vaccinates these hogs with hemorrhagic septicemia bacterin fails to get the desired results. This fact is based on statistics from the reports of the shipments. We should not forget that it is possible for hogs to break with cholera, but at the same time we should not forget that the stock hog is subjected to other infections which may prove equally as disastrous as cholera.

On arrival at their destination the hogs should be allowed to recuperate from their journey. They should receive not to exceed one-half of their grain ration. This ration should be maintained for at least two weeks, gradually working up to the full feed. By no means should they receive heavy feeds of corn.

Shorts, middlings, crushed barley, rye, ground and soaked oats to which a little tankage might be added are good feeds. Skim milk and buttermilk with a little bran is a good laxative diet when available. An abundance of clean water, sanitary troughs and feeding floors are essential. A small range, especially at first, is helpful.

It is necessary for the veterinarian called upon in such cases to know something of the feeding of these hogs, as many times the hog is put to a great disadvantage through faulty feeding methods.

W. W. EMMEL.

Des Moines, Iowa.

X-Ray as Diagnostic Agent in the Horse.

Patient: Bay pacing mare, 4 years old, weight 900 lbs.

History: Injured in a race, July 17, 1920; shipped from Ohio to Muncie, arriving July 24.

Symptoms: Severe lameness in the left hind leg, swelling slight between the fetlock and hoof. Great pain on pressure, slight crepitation, but no displacement.

Diagnosis: Fracture, exact nature not determined. X-ray examination revealed a complete longitudinal fracture of the ossuffraginis.

Treatment: Absolute rest. Leg bandaged from foot to hock, but not immobolized, as I was afraid if the leg was made rigid, ankylosis might occur; therefore, enough support was given by snug bandages to retain the parts in place. The animal was very careful and took excellent care of the injured leg. She would lie down and get up without touching the foot to the ground, thereby aiding repair greatly.

In October the mare was taken to the country and turned out to pasture, and on Dec. 13 was absolutely sound as far as lameness was concerned, showing only slight enlargment of the region involved, and slight deviation of the foot, from the ankle down, and outward from the natural contour. There was no visible involvement of the movements of either joint. This mare will be trained and raced the coming season.

H. MEADE HAMILTON.

Muncie, Ind.

More Careful Study Needed.

In the treatment of severe attacks of obstipation it is my belief that we frequently defeat our own line of treatment by the giving of considerable amounts of certain purges before inducing peristaltic action of the bowels.

This is particularly true of such physics as epsom salts, or like agents, which have action due to osmosis. Where peristaltic motion is lacking, such agents deplete to a large extent the muscular activity of the intestines, and hence no results are obtained, even when immense dosage is given. It is not infrequently that we have reported the giving of even seven or eight pounds of such salts without results having been obtained. Even when accompanied by strychnin or nux vomica, the debilitating effects of these large doses of salts are frequently sufficient to offset the effects of the strychnine.

Where auscultation reveals absence or greatly diminished peristaltic action, such action should be reestablished if possible by the hypodermatic injections of strychnin or similar agents before the administration of the usual oral cathartics. Where strychnin alone is insuffi-

cient to induce the normal activity of the bowels, exercise is a cheap and effective adjunct.

Obstipation or constipation is perhaps the most common condition with which we have to deal. More careful study of its causes and of methods of correction would seem to be essential to veterinary progress.

CLIFF. ACKLEY, D. V. M.
Centralia, Wash.

The Veterinary School of Meat and Dairy Hygiene.

The Veterinary School of Meat and Dairy Hygiene completed its first regular session on Dec. 15, when the following veterinary officers and enlisted men were graduated: Col. Wm. G. Turner, Lt. Col. Jos. R. Jefferis, Maj. Henry W. Peter, Maj. John A. McKinnon, Maj. Robt. C. Musser, Maj. Walter R. Pick, Capt. Wilfred J. Stokes, Capt. Daniel B. Leininger, 1st Lieut. Elwood L. Nye, 1st Lieut. Harold Clarke, 1st Lieut. Allen C. Wight, 1st Lieut. Edward M. Curley, Sgt. Wm. J. Cremers, Sgt. Harry Odelberg, Sgt. Kenneth B. McKee. Sgt. Ernest B. Benedict, Sgt. Rankin Rogers, Sgt. Isaac C. Shoffstall, Pvt. Dennis Hayes, Pvt. Wm. C. Hayes, and Pvt. Christopher C. Stokley.

The next regular course begins Jan. 15, 1921.

This instruction was really inaugurated at the General Supply Depot at the beginning of the war and a large number of veterinary officers received a short course. It was placed on a permanent basis as a part of the medical department training last summer by war department orders and the first class entered July 15. The Chicago depot by reason of its proximity to the great packing plants and abbatoirs posseses peculiar advantages for a school of this kind. The students are accorded every courtesy and have free access to the wonderful facilities for direct contact with the process involved in the slaughter, inspection and manufacture of meat and dairy products and purchase of forage.

The inspection of these supplies at time of purchase and at issue pertains to the routine duties of all veterinary officers and certain selected enlisted men. The graduate of a veterinary college today receives extensive instruction along these lines and the course at Chicago is in the nature of post-graduate training both theoretical and practical in the special duties of the army veterinary officer. With the advantage of his professional knowledge, it has been found practicable to qualify the veterinary officer in this work by a five months' course of intensive training. This is of material importance in securing efficient inspection, because the examination of food supplies of animal origin is a highly specialized branch of science of which the non-professional man lacking the required basic education, can never acquire more than a superficial knowledge. These inspections are essentially sanitary, being designed to protect the health of troops and from the nature of things fit in with the general sanitary work of the medical department.

The action of the War Department in making the veterinary service responsible for all meat and dairy inspection for the army as was done in 1918 was, therefore, a most logical procedure. All such supplies receive a veterinary inspection when acquired at the central purchasing points and so far as personnel is available when issued and when bought locally. The limited number of veterinary officers and enlisted men available has been the only obstacle to prevent the surgeon general from fully meeting the demands of the service and maintaining proper inspections at all stations.

All the meat used by China and the Phillippines is bought in China where the veterinary corps has operated an inspection force for several years. Similar work is carried on in the canal zone.

The following officers have been ordered to Chicago to take the course at the Veterinary School of Meat and Dairy Hygiene, beginning Jan. 15, 1921:

Maj. Walter Fraser, Maj. Wm. A. Sproule, Capt. Edw. I. Cheely, Capt Herbert S. Williams, Capt. Aquila Mitchell, 1st Lt. Everett C. Conant, and 2d Lt. Oscar C. Schwalm.

Calling Veterinary Reserve Corp Officers to Active Duty.

Under the above title, War Department Circular No. 240, states:

"The War Department has authorized a sufficient number of officers of the veterinary reserve corps to be called to active duty to raise the total number of officers (Regular, Emergency, and Reserve) of the veterinary corps to 175, the number of officers authorized by law for the veterinary corps. All officers of the veterinary reserve corps above referred to will be relieved from active duty June 30, 1921, or prior to that time, as permanent appointments in the veterinary corps fill existing vacancies, the total of

175 not to be exceeded at any time."

There are at present 163 officers in the veterinary corps, regular army, in the following grades: Colonel 3, Lt. Colonel 5, Major 17, Captain 29, 1st Lieutenant 83, 2d Lieutenant 26; total 163.

By authority contained in War Department Circular No. 240, quoted above, twelve officers of the Veterinary Reserve Corps in the following grades have been called to active duty: Captain 2, 1st Lieutenant 8, 2d Lieutenant 2.

C. F. MORSE,
Lt. Colonel, Medical Corps, Director, Veterinary Corps.

Hog Cholera and Immature Corn.

Hogs low in vitality from worms, lice, lack of proper nourishment, poor care, fatigue, overheat or undue exposure to cold are less resistant to the disease than vigorous swine in a good state of nutrition and properly cared for.

Anti-hog cholera serum contains the protective substances which prevent cholera and does not introduce disease; but it gives only a passive or temporary immunity.

The "virus" remains alive and virulent in the blood of double-treated swine for three or four weeks after vaccination; proper after-care should therefore be given double-treated hogs to avoid a "break" from "vaccination cholera."

"Breaks" following double treatment may occur if the virus is a weak or dead virus, the immunity in such cases being of scarcely greater duration than the immunity from serum-alone vaccination.

"Breaks" from vaccination cholera following the double-treatment may occur if the virus is active and the serum is low in potency. The virus in such a case is not held in check and develops visible signs of illness which may result in the death of several vaccinated animals.

"Breaks" from vaccination cholera following the double treatment may occur when active virus and fully potent serum are administered to swine of low vitality, the natural resistance of the animal plus the "serum reinforcement" being insufficient to withstand the disease activity of the virus. Avoid as much as possible giving virus to swine which are out of condition; give serum alone and later apply the double-treatment. But if this is not feasible increase the dose of serum considerably when giving the double-treatment.

"Breaks" from vaccination cholera are liable to occur in swine which are subjected to unusual conditions of fatigue, from long railroad hauls, or excessive handling too soon after vaccination, even though such swine were in thrifty and proper condition. Careful attention and light rations for several days may prevent losses, and revaccination in most cases will prove helpful.

If sickness occurs in a herd of double-treated hogs within three or four weeks after vaccination, cut down the feed at once, separate the sick animals, call a veterinarian, take the temperature, and if autopsies show lesions like cholera revaccinate the herd with anti-hog cholera serum.

A common fault in vaccinating hogs is to give too small a dose of serum. It is better to give a few cubic centimeters too much than a few cubic centimeters too little. In the former case the loss in extra expense is slight, while in the latter case both the serum and the hog may be lost.—Bulletin 174, by Dr. J. W. Connaway, University of Missouri.

Infectious Croupous Bronchitis and Bronchopneumonia of Swine.

During the summer and fall months of 1920, and doubtless before, an acute respiratory disease appeared in cholera-immune swine in various localities in Illinois. Dr. Griffin of Armstrong, Illinois, is responsible for calling our attention to an unusually serious and typical outbreak of this character wherein the clinical symptoms suggested a pathologic condition of the respiratory organs. Illness in this herd first developed on the show circuit, where large numbers of animals were afflicted. Upon returning home the sick and exposed animals apparently communicated the disease by association to other healthy animals on the premises, while the subsequent and sporadic development of the disease on adjoining farms further suggested a degree of contagiousness. Shoats weighing from 50 to 150 pounds seemed most susceptible, though old sows contracted the disease and died. The mortality in affected herds approximated as high as 10 percent, though in other herds practically all of the animals recovered. A rather high percent of the spring pigs upon exposure, contracted the disease, while the loss of condition, considering the chronicity of the disease in some animals, proved a serious, factor in non-fatal cases.

The symptoms were loss of appetite, general debility, gaunt appearance, prostration, inability to stand or marked weakness in walking was observed. Knuckling and weaving, arthritic

symptoms and muscle tremors were common in sick animals when urged to move. Rectal temperatures varied from subnormal to 107° F. in the early stages of the infection. Dyspnea, thumping or flank breathing was invariably present, accompanied by coughing. A viscid, yellowish mucus was expectorated from the mouth or discharged from the nostrils. Fat sows assumed a sitting posture with the front legs extended and abducted, breathing through the mouth with tongue extended. Affected animals displayed the symptoms in varying degrees, but abdominal breathing was considered the most common symptom. Death from cardiac failure occurred in five to ten days, and much sooner if the animal was subjected to exhausting exercise, while a majority of animals treated symptomatically recovered or showed marked signs of improvement in a similar period of time.

Gross Pathology. At autopsy, the primary gross lesions were generally confined to the respiratory organs. The bronchioles contained excessive amounts of watery, frothy mucus, while in pneumonic areas the bronchioles were filled with grayish, yellow, organized, inflammatory exudate, which in certain stages partially or completely filled the bronchioles or even resulted in bronchitic dilatation. Edema of the interstitial pulmonary tissue could be detected by palpation or made visible on cut section. Localized or diffuse areas of lung tissue upon close examination often resembled the gross appearance and texture of the pancreas or salivary glands. Localized plastic exudates adhered to the costal and parietal surfaces with varying quantities of serous fluid in the pleural cavities. Lobular pneumonic processes in various stages of development (red and gray hepatization) were more advanced at the apex or base of the lungs and in some instances gave a marbled or mottled appearance. The lungs were often engorged from a passive hyperemia. Pericarditis and cloudy swelling of the heart muscle was commonly observed. The body and visceral lymph-glands were often hemorrhagic and enlarged. Kidneys showed evidence of cloudy swelling. The liver was invariably congested, while the blood was dark and clotted slowly.

Etiology. A pleomorphic coccoid bacillus was frequently encountered in the spleen and lungs of naturally afflicted animals. Subcutaneous injections of this micro-organism proved fatal to rabbits and guinea pigs and intravenous injections occasionally produced the typical symptom-complex in swine. After animal passage and subculturing there was a distinct tendency to occur in pairs as a diplococcus, or in short chains of four and five, while occasional filaments were also observed. On favorable media and in young cultures directly from animals a coccoid morphology was observed. This tendency in B. suisepticus has been frequently seen, and in subcultures the close relation of this organism to B. suisepticus seems quite apparent. The presence of this pathogen does not exclude other possible etiologic factors, yet bacteriological findings suggest that the Pasteurella suiseptica, independent of hog cholera virus, may possibly be related to the development of the above disease of swine as it occurs in the middle west.

H. R. SCHWARZE.
University of Illinois, Urbana, Ill.

Removal of Placentas From Cows.

This is a subject that has been discussed pro and con by the profession for a number of years.

I have read all articles that came to my notice on this subject for several years, and only lately have I arrived at a satisfactory conclusion. Several veterinarians have used the uterine capsules with good results. My experience has not been very gratifying wiht capsules alone, from two view points: first, the farmer or owner who employs a veterinarian to remove a placenta expects you to remove it while on his premises by manipulation; second, if you use the capsule sometimes it is necessary later to remove it by the above method; so, in the long run about the only way I see out of it is to remove it by manual manipulation.

Next the question comes up as to what kind of an antiseptic to use on the hands and to irrigate the uterus. No doubt, the most common drugs used are cresolis compound, permanganate of potash, phenol, etc. I have used all of the above drugs with good results, but after completing an operation of that kind I would have about a day's fetid smell or odor that remained on my hands.

I have within the last year adopted the use of electrified chlorine as an antiseptic. It is ten times stronger than phenol, and is not dangerous to the patient. It dissolves albumins and thereby assists in the removal of the membranes. It destroys all odors in the uterous, and, best of all, the hands are left odorless. Electrified chlorine, I think, is a great asset to the veterinarian from the standpoint of an odor destroyer, and best of all it

does not leave an odor on the hands, as most all drugs do. Take for example cresolis compound; you may use it strong enough on the hands to kill the odor from the patient, but you accomplish this only by producing an odor stronger than the one you are battling with. But with the above mentioned drug you not only destroy all odors at once, but you kill all bacteria. J. L. GILLETT.
Barnard, Mo.

Paracentesis Through the Rectum.

The use of the trocar and canula is very common among veterinarians, but I find that in too many cases, because of our client's prejudice, we do not use it as freely as we should.

I wish to call attention to a type of cases I have had, in which I used it successfully where auto-intoxication from absorption of gases had advanced until the pulse in the submaxillary artery was imperceptible.

To cite one case in particular—a registered Percheron stallion had been sick for ten or twelve hours before I was called to attend him. All of the old-time remedies and a number of patent medicines had been tried without success. An empiric had also treated him and used the trocar in the right flank, with no beneficial results. I also used the trocar in the right flank and very little gas was evacuated. The pulse was imperceptible. I then administered one grain of strychnine sulphate with one-half grain arecolin hydrobromide, hypodermically, followed by one ounce of aloes and one quart of laxoleum containing one ounce of oil of turpentine.

Rectal examination revealed why I could not reduce the flatulence, which was so intense that respiration was very short and labored. I found the pelvic flexure of the great colon protruded into the pelvic cavity, entirely filling it.

I then inserted the trocar through the rectum into the great colon, the result being that the animal experienced great relief in five minutes. I then tapped the small intestine in a number of places, still using the trocar through the walls of the rectum.

Within thirty minutes peristalsis was restored, and in three or four hours the patient was eating a little hay.

No ill-results followed in this case, except that the animal was a trifle sluggish for about thirty-six hours.

I have used the trocar as above described in a number of cases after I had failed to relieve the patient by the use of the stomach-tube, and the trocar in the flank. I have never had peritonitis follow the use of the trocar through the rectum, and if used cautiously I find it a very safe and practical procedure of the greatest value.
Moscow, Kansas. O. K. PEARCE.

A Strong Solution of Phenol a Desirable Wound Application.

The following treatment I have found to be the best in all puncture wounds:

In any kind of puncture, and especially in calk wounds, no matter where located, if the wound is not large enough to admit an instrument, I make it so. I then put about one ounce of phenol in a six-ounce glass and fill it up with water. I cut a piece of bandage roll and put in the glass and leave for a few minutes. Then I force as much of it as I can into the wound, pushing it in as many directions as it will go, under the skin and between the muscles.

I leave this in for twenty-four hours, then remove it. After that, all I do is to inject antiseptic oil, two or three times a day. The amount of phenol may seem excessive, but it will be found to be all right.

This procedure will abort blood poison or localize the trouble. I have never lost an animal from puncture wound since I began using this method of treatment.

I apply it to fresh wounds likewise.
Robinson, Ill. F. N. GATTON, D. V. M.

Barium Chlorid and Water for Impaction of Rumen.

In treating impaction of the rumen, I have my client heat ten gallons of water as hot as one can bear the hand in, and add to this, one teacupful of sodium chlorid. Then tapping the rumen with a cattle trocar, attach the stomach-tube and pump to the trocar, and pump the ten gallons of water into the impacted mass. I then administer five barium chlorid and tartar emetic tablets, fifteen grains each, and one grain strychnin sulphate in a No. 10 capsule. I leave twenty-five tablets of barium chlorid and tartar emetic and five one-grain strychnin tablets, with directions to give five large tablets and one small tablet dissolved in a pint of warm water three times a day until all are given. If this treatment is followed the great majority of impaction cases can be saved.

Twenty gallons of water pumped into the rumen of a cow will not distress the animal if pumped in slowly. W. R. MORGAN.
Eminence, Ky.

Uniform Methods and Rules for Tuberculosis-Free Accredited Herds of Pure-Bred Cattle.*

1. A tuberculosis-free accredited herd is one in which no animal affected with tuberculosis has been found upon two annual or three semi-annual tuberculin tests, and by physical examination, applied by a veterinary inspector of the United States Bureau of Animal Industry or a regularly employed veterinary inspector of the state in which co-operative tuberculosis eradication work is conducted by the United States Department of Agriculture and the state.

Section (*a*). The subcutaneous, intradermic and ophthalmic methods of applying the tuberculin test are approved.

Section (*b*). The initial testing in accredited herd work may be by either the subcutaneous or intradermic method, but the ophthalmic method shall be used only in combination with the subcutaneous or intradermic method.

Section (*c*). The final test on herds shall be by such combination of methods as may be deemed most advisable by the State and Federal officials.

2. The entire herd, or any cattle in the herd, shall be tuberculin tested or retested at such time as is considered necessary by the Federal and State authorities.

3. No cattle shall be presented for the tuberculin test which have been injected with tuberculin within sixty days immediately preceding, or which have at any time, reacted to a tuberculin test.

4. An accredited herd in which not more than one reactor is found at a subsequent tuberculin test, may be reinstated to the list if the entire herd passes a successful test without reactors; said test to be applied not less than six months from the date when the reactor is removed from the herd and farm, providing the owner has complied with all the requirements with reference to the introduction of additional animals to the herd, and also all other requirements of the accredited herd plan.

5. No cattle other than those of an accredited herd, shall be added to an accredited herd or to a herd that is in the process of accreditation until they have passed two tuberculin tests applied at intervals of not less than sixty days or more than ninety days, by a regularly employed state or federal veterinarian or by a veterinarian specially authorized by the state and bureau to conduct such tests. The cattle may, after passing the first test, be placed on the farm or premises containing an accredited herd or one in the process of accreditation, but must not be allowed to associate with said herd until after passing the second test.

6. (*a*). When a herd has been officially accredited by the United States Department of Agriculture and State, it shall be when ordered by the live stock sanitary officials of the State, tuberculin tested annually by any veterinarian whose name is upon the accredited list of veterinarians approved of by the United States Bureau of Animal Industry, provided that before any veterinarian other than one who devotes his entire time to the work of any state or the Bureau of Animal Industry can be approved for accredited herd work, he shall have passed an examination conducted by the proper live stock sanitary officials of the state in which he resides, and the Bureau of Animal Industry. He shall then be eligible to conduct annual tuberculin tests upon herds which have been officially accredited upon dates approved of by the proper state live stock sanitary official and the inspector in charge of the Bureau of Animal Industry in the state wherein the herd is located.

(*b*). No herd test can be made by such an approved veterinarian unless he has instructions in writing from the state officials to that effect. The dates of the annual tests for each herd shall be recorded in the state office and, also, in the office of the inspector in charge. On any annual test the state and bureau reserves the right to have a regularly employed official present on the farm to supervise the testing done by the approved veterinarian.

(*c*). The approved veterinarian shall conduct each test strictly in accordance with instructions issued by the Bureau of Animal Industry to employes engaged in co-operative tuberculosis eradication work. At the conclusion of each test, the approved veterinarian shall submit to the state veterinarian and the inspector in charge of the Bureau of Animal Industry, a copy of the record of the test.

(*d*). Any animal of a herd under supervision which may react in any herd tuberculin tested by an approved veterinarian, shall be marked for the purpose of identification in accordance with the regulations of the state in which the animal is located.

(*e*). Tuberculin tests applied by veterinarians other than those regularly employed by the state

*Report of the Tuberculosis Committee, read and adopted at meeting of the U. S. Live Stock Sanitary Association, Chicago, Nov. 29-Dec. 1, 1920.

and the Bureau of Animal Industry shall be paid for by the owner of the herd.

7. Before a herd can be accredited the stables and premises shall be placed in a sanitary condition. When reactors are disclosed as the result of any test, they must be immediately removed from the farm and the stables thoroughly cleaned and disinfected before the herd shall be identified as in process of accreditation.

8. Prior to each tuberculin test satisfactory evidence of the identity of the registered animals shall be presented to the inspector. Any grade cattle maintained in the herd, or associated with the animals of the herd, shall be identified by a tag or other marking satisfactory to the State and Federal officials.

9. All removals of cattle from the herd, either by sale, death, or slaughter, shall be reported promptly to the said State or Federal officials, giving the identification of the animal and, if sold, the name and address of the person to whom transferred. If the transfer is made from the accredited herd to another accredited herd, the shipment shall be made only in properly cleaned and disinfected cars. No cattle shall be allowed to associate with the herd which have not passed a tuberculin test approved by the State and Federal officials.

10. All milk and other dairy products fed to calves shall be produced by an accredited herd, or, if from outside or unknown sources, it shall be pasteurized by heating to not less than 150° F., for not less than 20 minutes.

11. All reasonable sanitary measures and other recommendations by the State and Federal authorities for the control of tuberculosis shall be complied with.

12. Cattle from an accredited herd may be shipped interstate, by certificate obtained from the office of the state live stock sanitary officials of the state in which the herd is located or from the office of the Bureau of Animal Industry, without further tuberculin test for a period of one year, subject to the rules and regulations of the state of destination.

13. Strict compliance with these methods and rules shall entitle the owner to a "Tuberculosis-Free Accredited Herd" certificate, to be issued by the Federal and State departments. Said certificates shall be good for one year from date of test unless revoked at an earlier date.

14. A supplementary list shall be made to the accredited herd list to contain the names of the owners of pure bred herds that are found free from tuberculosis on two annual tuberculin tests but in which the herd bull reacted. Such herds shall not receive an accredited herd certificate. The reacting bull may be used under the following conditions:

(*a*). He shall have passed a satisfactory physical examination and be kept in isolation and quarantine under state supervision.

(*b*). When it is desired to breed cattle to the reacting bull, such cattle shall be taken to the bull and bred on neutral ground. The bull shall be controlled on a staff or halter.

(*c*). After the bull is no longer used in the herd, that herd may be fully accredited after two successful tuberculin tests applied not less than six months apart.

15. Failure on the part of owners to comply with the letter or spirit of these methods and rules shall be considered sufficient cause for immediate cancellation of co-operation with them by the State and Federal officials.

Fistula Closed by First Intention?

On page 66 of the January issue appears a report by Dr. McEwen, on "Bowel Fistula a Sequel to Distemper," which was somewhat similar to a case I had in a yearling mare colt. This colt was noticed to have an enlarged navel, the adjacent areas of which, together with the front parts of the hind legs would be soiled with what looked like feces. Upon examination I found an opening through the skin and into the bowel, through which the contents were continually dribbling, and a probe was run full length each way from the opening into the bowel without coming to a stop. I cast the colt, and, cutting away the indurated tissue from the skin, brought the edges of the latter together with a clamp, hoping for results similar to those obtained in an ordinary umbilical hernia. But the skin was too tender for the strain put upon it and it sloughed off in a couple of days, leaving a larger opening than before. I advised the owner that I knew of nothing further to do except to destroy the colt or let it live and see what effect the discharge would have upon its health. He chose the latter course and in a couple of months informed me that upon examination he found the fistula had closed, and it is still closed. In this case I could find no cause that satisfied me and as for the fistula closing by first intention, it seemed to me impossible, considering the amount of bowel contents escaping.

Anthon, Iowa. B. F. WARD, JR.

Man is not the creature of circumstance; circumstances are the creatures of man.—Disraeli.

Matters of Current Interest

New York State Veterinary College, N. Y., Opens Re-Constructed Buildings.

On Dec. 13, at the New York State Veterinary College, N. Y. University, New York City, occurred one of the most eventful occasions that has taken place since the union of the old schools, i. e., the opening of the new home.

Notwithstanding that men of state and national renown took part in this celebration and meeting, and that President Berns and Secretary Eichhorn put forth great effort to make this occasion a success, and not deprecating in the least the splendid offices of the members of the faithful faculty who have stood by the old school, sometimes depriving themselves that they might more generously support it; in the midst of all this, one man stood out Napoleon-like, crowned with glory, as the master hand that came to the old school four years ago, when its skeleton was being literally held together by a few of its loyal supporters, this man raising its ruins, Phenix-like, figuratively speaking, and inviting this happy gathering on this memorable evening, into the most modern and best equipped veterinary institution that New York City has ever known. All of this Dean Hoskins has done in less than four years, with a zeal that knew no bounds and with an energy that few could match.

The guests gathered in the Alexander Liautard Library where many were the favorable comments on this spacious well lighted room and the thousands of volumes of veterinary literature splendidly arranged and indexed, that is now at the service of the profession.

The Henning Hall of Anatomy, the James L. Robinson, Roscoe R. Bell, and H. D. Gill lecture halls were visited. Such evidence of due appreciation must be consoling to those whom these loyal men have left behind, and gratifying to our zealous Henning.

The John P. Munn Laboratories are indeed a delightful testimony to this splendid, magnanimous, college friend of whom it is not too much to say that we doubt and doubt seriously, if without his counsel, encouragement and financial support, the old school could have weathered the storm and dark days that followed the loss of Liautard. Like Lafayette, it was while dangers pressed that he came to join our fortunes. May he live long to receive the thanks and gratitude of the many students who, through his generosity, have been able to receive a veterinary education.

Chancellor Elmer E. Brown who has always shown a sincere interest in the struggles of the school, addressed the gathering with praise for Dean Hoskins and strong words of assurance for the future of the college and veterinary medicine.

President of the Council, Rev. Dr. George Alexander, Dean Samuel A. Brown of the Medical College, Dean Chas. H. Snow of the School of Engineering, Dean A. L. Bouton of the School of Arts and Applied Science, Dr. Robert J. Carlisle, president of the medical alumni, Mr. A. W. Milbury, and our ever faithful Dr. John R. Munn, chairman of the council committee of medical and veterinary schools, were distinguished and welcome guests, all of whom spoke words of appreciation and encouragement for veterinary science.

Then followed a most interesting and educational illustrated lecture by Prof. W. Reid Blair, on the "Intelligence of Animals," and what might be styled a companion paper was read by that loyal alumnus, W. G. Hollingsworth, who had journeyed all the way from Utica to address the meeting on the subject, "Be Kind to Animals."

The meeting then adjourned and all were taken charge of by the ladies, more than fifty of whom had gathered to aid in the celebration. Their generous entertainment with punch and dainties was thoroughly appreciated and seemed just the thing necessary to round out a most delightful evening.

J. F. DE VINE.

Indiana Veterinary College Festivities.

The dance given at Hotel Severin, November 19th, by the junior class of the Indiana Veterinary College in honor of the faculty and students, proved to be a thoroughly enjoyable affair. Practically the entire student body and most of the faculty were present, and the evening passed pleasantly with dancing, singing of old songs, topped off with a buffet lunch between dances, of doughnuts and coffee made by the daughters of Dr. J. C. Vance, who holds the unique record of being in the same class in the college with his son, Dr. J. B. Vance. The committee in charge comprised Drs. W. P. Tague, J. C. Vance and J. S. Shirley.

PROFESSIONAL INCOME.

How the Federal Tax Applies to the Man of the Professions.

To the professional man the problem of correctly making out an income tax return for the year 1920 is somewhat more involved than that presented to the salaried man. The wage earner on a fixed salary has an accurate estimate of the amount of compensation received for personal services, while the professional man's income varies from year to year. In the professional class may be included the physician, dentist, lawyer, architect, veterinarian, author and clergyman. Each must figure up his net income for the last year. If single or if married and not living with his wife, and his net income was $1,000 or more, or if married and living with his wife, and his net income was $2,000 or more, a return must be filed.

The exemptions are the same as for the year 1919, $1,000 for single persons and $2,000 for married persons living with husband or wife, and heads of families, plus $200 for each person dependent upon the taxpayer if such persons are under 18 years of age, or incapable of self-support because mentally or physically defective. The period for filing returns is from January 1 to March 15, 1921.

The professional man must make a return of all fees, salaries and other compensation for services rendered, together with income from all other sources. If he keeps his accounts on the "receipts and disbursement" basis—which means a record of the amount received and the amount paid for expenses—he should file his income tax return for the year 1920 on that basis. If he keeps books showing income accrued and expenses incurred during the year, he must make his return from his books and include all income, even though not entered on his books. If books are kept on the accrual basis the taxpayer must include all income that accrued, even though not actually received, and may deduct items of expense, although not actually paid. Both the receipts and disbursement basis and the accrual basis are explained in instructions on the forms for filing individual returns of income.

This constitutes gross income from which the taxpayer is allowed certain deductions in arriving at net income upon which the tax is assessed. Among such deductions are the cost of supplies used by him in the practice of his profession, expenses paid in the operation and repair of an automobile used exclusively in making professional calls, dues to professional societies and subscriptions to professional journals, rent paid for office room, expense of fuel, light, water, telephone used in his office, and the hire of office assistants. Amounts expended for books, furniture and professional instruments and equipment of a permanent character are not allowable deductions. In the case of a professional man who maintains an office, but incidentally receives at his home patients, clients or other callers in connection with his professional work, no part of the rent of the home is deductible. If, however, he uses part of the house for his office such portion of the rent as is properly attributable to such office is a deductible item.

A reasonable allowance is made for depreciation, or wear and tear of equipment and instruments used by professional men. When through some new invention or radical change in methods or similar circumstances, the usefulness in his profession of some or all of his instruments or other equipment is suddenly terminated, so that he discards such asset permanently from use, he may claim as a loss for that year the difference between the cost (reduced by reasonable adjustment for wear and tear it has undergone) and its junk or salvage value. If the apparatus was owned prior to March 1, 1913—the date the first income tax law became effective—its fair market value at that date should be considered instead of its cost in figuring depreciation and obsolescence.

Deductions for uncollectible fees form an important item in the returns of many professional men. To be allowed as a deduction, a debt must be worthless and must have been charged off within the year in which its worthlessness was discovered. The return must show evidence of the manner in which discovery was made. For example, statement should be made that the debtor has been discharged from bankruptcy or has disappeared, leaving no trace, or that all ordinary means of collection have been exhausted.

A debt proved to be worthless is not always a proper deduction. Unpaid amounts representing fees for professional services are not allowed as deductions unless included as income in the return for the year in which the deduction is sought or in a previous year. The fact that expected income was not received does not reduce the taxable income. If a debt is forgiven it cannot be deducted, because it is then regarded as a gift. A debt may not be charged off or deducted in part, but must be wholly worthless before any part can be deducted.

Compensation in any form for professional services must be included as income. If a physician, lawyer, or other professional man should receive from a merchant goods in payment for professional services, the fair market value of such goods must be included as net income.

Forms for filing returns are now available at offices of collectors of internal revenue and branch offices. Collectors will mail to each person who last year filed a return a copy of the return form for 1920. Failure to receive a form, however, does not relieve a taxpayer of his obligation to file a return and pay the tax on time. Taxpayers whose net income for the year 1920 was $5,000 or less should use Form 1040A. Those whose net income was in excess of $5,000 should use Form 1040.

In addition to the individual forms, partnerships must file a return of income, or even if there was no net income, on Form 1065. Partnerships as such are not subject to the income tax. Individuals carrying on business in partnership, however, are taxable upon their distributive shares of the net income of such partnerships whether distributed or not, and are required to include such shares in their individual returns. The return must show the name and address of each partner and his share of net income.

The tax this year as last may be paid in full at the time of filing the return—on or before March 15, 1921—or in four equal installments, due on or before March 15, June 15, September 15 and December 15. Payment may be made by cash, money order or check, which should be made payable to "Collector of Internal Revenue." The return must be filed with the collector for the district in which the taxpayer lives or has his principal place of business. Heavy penalties are provided by the revenue act for failure to file a return and pay the tax within the time prescribed by law.

Live Stock Company Gets Big Damages Against Railroad.

The decision recently rendered at Billings, Mont., in the case which has attracted much attention from veterinarians and stockmen throughout the west, is of particular interest inasmuch as nine veterinarians, including Dr. B. F. Davis, Montana state veterinarian, were called in testimony during the hearing in which 272,400 words of testimony were given by fifty-five witnesses.

The case was that of the Phelps-Galbraith cattle company against the Great Northern railroad. A verdict of $20,685 was returned by the jury for damages because of the death of 150 of a shipment of 980 steers from Cody, Wyo., to Seville, Mont., during the summer of 1917. The plaintiffs asked for $45,000 damages, alleging negligence and unjustifiable delay in transit. The railroad sought to show that the animals which were shipped from the Pitchfork ranch, had been weakened by heat before being placed in the cars, and that the deaths resulted from this cause and the effects of eating salt sage.

Dr. T. A. Sigler of Greencastle, Ind., has accepted a position with the Missouri Valley Serum Company of Kansas City. Dr. Sigler will have charge of sales in Indiana with headquarters in Indianapolis.

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Horse Supply Depleted.

That it will take 36 years to replace the horses now on Marshall-Putnam counties farms in Illinois, according to the present rate of breeding, was brought out by the recent live stock survey of the Illinois Agricultural Association's Live Stock Department and the Farm Bureaus. The figures showed 545 horses on the fifty-seven farms in Putnam county and 4,423 horses on 514 farms in Marshall county.

A survey on 32,515 Illinois farms in the 102 counties shows a total horse population of 238,546. The 45,412 brood mares only foaled 8,918 colts during the quarter ending July 1, 1920. Assuming that the average age of a horse is 13 years, it follows that a shortage of good farm horses will be inevitable, unless the present output of farm raised colts is doubled. Continued inactivity in horse breeding on the farms of the corn belt may ultimately result in prices of work horses rising to an almost prohibitive point.—Marshall-Putnam Farm Bureau.

Dr. C. W. Boyd, formerly in charge of the Pennsylvania B. A. I. at the Union Stockyards, Pittsburgh, Pa., is now engaged in private practice at Sewickley, Pa.

Dehema Association Holds Monthly Meeting.

The Dehema Veterinary Medical Association, composed of veterinarians of Delaware, Henry and Madison counties, Indiana, held its monthly meeting at Dr. Hamilton's veterinary hospital, Muncie, Ind., Dec. 15, with a good attendance.

The following officers for the ensuing year were elected:

Dr. C. M. Weber, Oakville, president; Dr. C. C. Allen, Selma, vice-president, Delaware county; Dr. R. E. Kepner, Newcastle, vice president, of Henry county; Dr. H. A. Smith, Anderson, vice president, Madison county; Dr. H. Meade Hamilton, Muncie, re-elected secretary-treasurer.

The following topics were discussed: "Important Veterinary Legislation," Indiana State Veterinary Medical Association," "Serum Production, Distribution and Use," and "Enforcement of the Veterinary Practice Act."

Drs. H. A. Smith and F. A. Moore were appointed on the program committee for the next meeting, to be held Feb. 16, the subject to be "Swine Diseases."

H. MEADE HAMILTON, Secy.

Best to Leave the Stuff Alone.

The jury decided for the defendant in a recent suit brought in Morgan County, Illinois, against the National Live Stock Remedy Co. for damages for loss of hogs, following the feeding of medicine put out by this company. The court's decision was made on the basis that if a man feeds any patent medicine to his stock with unsatisfactory results, he will have no recourse through the courts. The recommendation was that the safe course was "to leave the stuff alone."

Dr. C. B. Simmons, one of the best known and most popular veterinarians identified with the serum industry, has been named regional director of sales for the Sioux City Serum Company of Sioux City, Iowa. Dr. Simmons will be in charge of the East St. Louis, Peoria and Indianapolis offices of the Sioux City Company. Dr. Simmons is splendidly fitted for his new connection, having at various times acted in the capacity of producer, inspector and sales manager.

The enrollment at the post graduate school conducted by the Indiana Veterinary College at Indianapolis last month, was only fair. The course of instruction offered was exceptionally good. Among the special instructors at the school were Drs. L. A. Merillat, J. F. DeVine, T. H. Ferguson, A. T. Kinsley and E. A. Cahill.

Hal Simpson Locates in California.

Dr. Hal Simpson, the genial, successful and well known veterinarian, formerly of Dennison, Iowa, is now located at Pomona, Cal., where he has purchased a home and office property, taken the state board examination and attended the veterinary practitioner's short course given by the Division of Veterinary Science of the University of California and has re-embarked in the practice of his chosen profession.

Dr. Simpson is a splendid example of the progressive veterinarian who does not believe that he can know too much and who is not content with knowing just enough to "get by with," as this is the second post-graduate course he has taken in the last year. We wish him all possible success in his new field.

We are pleased to note that Dr. C. D. Hartman of Peoria, Ill., is slowly recovering from the effects of injuries sustained in an automobile accident some little time ago. Several bones were broken when his car collided with another one while he was out making an early morning call.

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Eye Test Check on Other Tuberculin Tests.

The eye test for detecting tuberculosis in cattle has the approval of the scientists of the Bureau of Animal Industry. The ophthalmic or eye test is used as a check upon the older methods, as it happens occasionally that an animal that will not react to the subcutaneous injection or intradermal test will react to the eye test.

Two tuberculosis tablets are placed in the conjunctival sac beneath the lower lid of the left eye, and observations are taken at approximately the third hour following and at frequent intervals up to twenty-four hours. Reaction to the test is indicated by discharge and swelling.

The B. A. I. is not prepared to accept the evidence of the eye test alone where cattle are intended for interstate shipment. The test, however, furnishes an additional safeguard when used with the older methods.

The eye test is not well adapted for use upon range cattle or cattle in transit, because of the possibility of dust setting up an irritation not related to tuberculosis. It has its best use on the dairy farm, where conditions are such as to give sure results.

The experts have observed that in herds which are frequently tested by the subcutaneous method it is advisable to apply the intradermal and the eye test also. The combined tests sometimes detect reactors which have escaped detection by other means.

The West Central Indiana Veterinary Medical Association held its December meeting at Lebanon, Ind. Topics of general interest were discussed and Drs. E. B. Haskin and J. E. Gibson of the B. A. I. addressed the members on the ever-present subject of the eradication of tuberculosis from live stock. The object of the organization is to promote interest in live stock sanitary matters and promote the holding of public meetings devoted to educating laymen on the subject.

Dr. A. K. Andrews, recently in practice at Elkton, Oregon, has taken over the extensive practice of Dr. W. J. Patterson at Salem, Ore. Dr. Andrews held a captain's commission in the veterinary corps during the late war, having been in charge of the veterinary base hospital at Fort Sam Houston, Tex.

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This book contains a large number of State Board Questions from a number of the representative states. That the book is accurate is evidenced by the fact that the high authorities on the different phases of veterinary science, and the extensive library of the Veterinary School of the University of Pennsylvania have been carefully consulted and compared. It is unequaled as a guide to the review of the whole subject of veterinary medicine, and is much used by those preparing for civil service or state board examinations. No one, unless just out of school, can do himself justice in one of these examinations without such a review.

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Annual Conference at Ithaca.

A program of unusual interest and value was carried out at the thirteenth annual conference of veterinarians, held at the New York State Veterinary College at Cornell University, Ithaca, N. Y., January 20 and 21. Many prominent veterinarians and others of note appeared on the program. Among those prominently participating were: Dr. J. H. Mohler, Dr. V. A. Moore, J. F. DeVine and Dr. J. G. Wills; also Theobald Smith, director, Rockefeller Institute, Princeton, N. Y., and Wayne Dinsmore, secretary of the Horse Association, Chicago. The range of subjects was wide, and from all accounts the conference was a most successful one.

Dr. M. A. Ryan, formerly captain in the veterinary corps, U. S. A., is now holding the position of deputy sheriff in Oakland, Cal., having forsaken veterinary practice for the time being.

Miss Marea H. Stoll, manufacturer of the Stoll Stay-There Earmark, has removed from Beatrice, Neb., to Colorado Springs, Colo., where she will continue her business. The change was made necessary because of ill health.

Good Opening for Veterinarian.

We are informed by Dr. A. T. Peters that Jefferson county, Illinois, has no graduate veterinarian and that the county is in need of a graduate veterinarian to locate in Mt. Vernon, which is a beautiful town and a good location for the right man.

Kentucky Veterinarians, Attention.

Extensive preparations have been made by the committee in charge, to make the mid-winter meeting of the Kentucky Veterinary Medical Association enjoyable, not only from an educational point of view but socially also. The meeting will be held at Paducah, Feb. 9 and 10. Matters of general interest will be up for discussion.

Dr. B. Brunink, a 1918 graduate of the Grand Rapids (Mich.) Veterinary College, has taken over the practice of Dr. L. A. McGibeny at Evart, Mich., Dr. McGibeny having located at Belmont, N. Y.

Dr. George Donnelly, late lieutenant in the veterinary corps, has eschewed veterinary practice and is now connected with the Moore shipyards, Oakland, Cal.

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Veterinary Corps Notes.

Maj. John H. Gould has been relieved from duty at headquarters, Seventh Corps Area, Fort Crook, Neb., and has been ordered to Fort Riley, Kan., for duty as post veterinarian and for officer in charge of veterinary instruction at the cavalry school.

Maj. Chas. H. Jewell has been ordered to Walter Reed Hospital, Washington, D. C., for gastritis treatment and for suspected cancer of the stomach.

The British publication known as *The Veterinary Record*, has been taken over by the National Veterinary Medical Association of Great Britain and Ireland. The January, 1921, number is the first to be issued under the new management.

Dr. John W. Briggs, who was born at Leeds, England, was a New York graduate, and later practiced in Sioux Falls, S. D., for thirty years, died recently at the home of his daughter in Portland, Ore., where he resided for the past five years, invalided from paralysis.

Dr. J. A. Hill, formerly located at Oakland, Cal., is now engaged in practice at El Paso, Tex.

Pinned Beneath Auto.

Dr. George Pugh of Lawton, Okla., was seriously injured recently when his auto turned turtle while he was on his way to make a call. He was found pinned beneath the car, where he had lain unconscious for several hours. He was hurried to the hospital where it was found that he was badly bruised and had possibly sustained serious internal injuries.

Dr. Clyde C. Brown of Peoria, Ill., died recently at the age of 41. He is survived by his widow.

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Let VETERINARY MEDICINE come right along. I feel that I cannot afford to be without it, as I have been taking it regularly since 1911, and have copies in my office bearing that date.—J. D. H., Texas.

Veterinarians of Macoupin county, Illinois, perfected the organization of a county association at a meeting recently held at Carlinville. Dr. A. Fletcher of Virden was chosen as president and Dr. W. E. Schlankser of Carlinville, secretary.

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ASSOCIATION MEETINGS

The information given below is up-to-date and has been furnished by the secretaries of the various associations listed Secretaries are requested to furnish us data regarding their association after each meeting; otherwise the association will necessarily be dropped from the list. We trust the secretaries will co-operate with us in keeping before the numbers of their associations the date and place of the next meeting.

ASSOCIATION	PLACE	DATE	SECRETARY
American Vet. Med. Assn.	Colorado	August, 1921	N. S. Mayo, 4753 Ravenswood Ave., Chicago
British Columbia Vet. Assn			Kenneth Chester, 310 Warren Ave., New Westminister
Central Can. Vet. Assn	Ottawa, Ont	Jan. 19 or 20	A. B. Wickwire, 1031 Carling Ave., Ottawa, Can.
Central N. Y. Vet. Med. Assn.	Syracuse, N. Y.	Nov. 18	W. B. Switzer, Oswego, N. Y.
Chicago Vet. Soc.	Chicago	Second Tuesday of each month	J. B. Jaffray, Chicago, Ill.
Colorado Vet. Med. Assn.	1525 Curtis St., Denver, Colo.	Jan. 20	I. E. Newsom, Fort Collins, Colo.
Conestoga Vet. Club	Lancaster, Pa	Nov. 11	W. S. Fritz, Strasburg, Pa.
Connecticut V. M. Assn	New Haven, Conn.		G. E. Corwin, 99 Ann St., Hartford, Conn.
Eastern Iowa Vet. Assn.	Cedar Rapids, Ia.		J. Wolfe, Grand Mound, Ia.
Genesee Valley V. M. Assn.	Rochester, N. Y.	Second week in January	F. E. Cleaver, Avon, N. Y.
Georgia St. Vet. Assn.	Athens, Ga		W. M. Howell, Valdosta, Ga.
Hudson Valley V. M. Assn.	Rhinebeck, N. Y.		W. H. Kelly, 233 Western Albany N. Y
Illimo V. M. Assn.	Collinsville, Ill.		S. T. Finnegan.
Illinois S. V. M. Assn.	Chicago, Ill.	Dec. 2-3, 1920	D. M. Campbell, 9 So. Clinton St., Chicago
Indiana V. M. Assn	Indianapolis	Jan 11-13	E. T. Davis, Plainfield, Ind.
Iowa Vet. Assn	Ames and Des Moines	Jan. 18-20	H. D. Bergman, Ames, Iowa
Kansas V. M. Assn.	Salina, Kans.	Jan. 4-5	W. J. Guilfoil, 221 N. 17th St., Kansas City, Kansas
Kentucky V. M. Assn	Paducah, Ky	February	C. W. Fisher
Louisiana Vet. Med. Assn.			E. P. Flower, Baton Rouge, La.
Maine V. M. Assn	Augusta, Me.	Second week in January	P. R. Baird, Waterville, Me.
Michigan S. M. M. Assn.	East Lansing, Mich.	Feb. 8-9	H. F. Palmer, Brooklyn, Mich.
Minnesota V. M. Assn.	Minneapolis	Jan. 13-14	C. P. Fitch, University Farm. St. Paul
Mississippi S. V. M. Assn	Canton, Miss	Jan. 25-26	J. A. Barger, Jackson, Miss.
Missouri Valley Vet. Assn.	Kansas City, Mo.	Feb. 8-9-10	R. F. Bourne, Ft. Collins, Colo.
Missouri Vet. Med. Assn.	St. Louis, Mo.	July	C. D. Folse, 4018 Harrison, Kansas City, Mo.
Natl. Assn. of B. A. I.	Meet with A. V. M. A.		S. J. Walkley, Milwaukee, Wis.
Nebraska S. V. M. Assn.	Grand Island	Dec. 15-16	C. J. Norden, Lincoln, Nebr.
Nevada St. Vet. Assn	Reno, Nevada	January, 1921	S. Lockett, Reno, Nev.
New York S. V. M. Soc.	Buffalo, N. Y.		C. E. Hayden, Ithaca, N. Y.
Ohio St. Vet. Med. Assn.	Columbus, Ohio	Jan. 20-21	R. I. Bernath, Wauseon, Ohio.
Okla. St. Vet. Med. Assn.	Oklahoma City	Jan. 11-12	H. W. Ayers, Oklahoma City.
Oregon V. M. Soc.	Seattle, Wash	August, 1921	B. T. Simms, Corvallis, Ore.
Pa. State Vet. Med. Assn.	Harrisburg, Pa.	Jan. 25-26	R. M. Staley, 6716 N. 6th, Ardmore, Pa.
Philadelphia Vet. Club	Philadelphia	Fourth Tuesday of month	C. S. Rockwell, 5128 Chestnut, Philadelphia
Schuylkill Val. V. M. A.	Reading, Pa.	3rd Wed. in June	R. L. Burger, Hamburg, Pa.
Southern Cal. V. M. Assn.	Los Angeles	Third Wednesday of month	J. A. Dell, 16th & Orchard, Los Angeles
Southeastern Mich V. M. A.	Detroit, Mich.	Second Wednesday, January, April, July, October	H. P. Hoskins, Box 471, Detroit, Mich.
Southeastern St. V. M. A.	Spartanburg, S. C.	Jan. 24-25	J. L. Handley, Atlanta, Ga.
Southern Tier V. M. A	Elmira, N. Y.		R. R. Birch, Ithaca, N. Y.
Tennessee V. M. A.	Knoxville, Tenn.		J. M. Jones, Lewisburg
Utah S. V. M. Assn			E. A. Bundy, Ogden
Vermont Vet. Med. Assn	Montpelier, Vt	February	Geo. Stephens, White River Jct.
Vet. Assn. of Alberta	Calgary, Alta.	September, 1921	T. E. LeClaire, 110 6th Ave. E. Calgary
V. M. Assn. of New York City	338 E. 26th St	First Wednesday of month	J. E. Crawford, Far Rockaway
Va. S. V. M. Assn.	Richmond, Va.	Jan. 13-14	W. G. Chrisman, Blacksburg, Va.
Wash. State Col. V. M. A.	Wash. State College.	Second and Fourth Tuesday of Month	S. Worley, College Sta.
Wash. S. V. M. Assn	Seattle, Wash	July, 1921	C. Cozier, Bellingham
Western N. Y. V. M. Assn.	Buffalo, N. Y.	Second week, December	F. F. Fehr, 243 S. Elmwood, Buffalo,
Western Pa. Vet. Club		Third Tuesday of month	Fred Weitzel, Pittsburgh
Wisconsin V. M. Assn	Madison, Wis.	Jan. 19-20-21	W. A. Wolcott, Madison, Wis.
York Co. V. M. Soc.	York, Pa.	First Tuesday March, June, September, December	E. S. Bausticker, York, Pa.

Lieut. Elmer Rhoads, who has been stationed at Fort Bliss, Texas, in the remount department of the United States cavalry, has located at Bloomington, Ill.

Former state veterinarian, Dr. A. S. Cooley of Cleveland, Ohio, was elected as a member of the lower house in the Ohio legislature during the recent election.

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Following the publicity early last year, due to a number of deaths in various parts of the country from eating ripe olives containing Bacilli botulinus, which incidentally resulted in the loss of $4,500,000 to California olive growers, a war of extermination upon the germ was begun. The result of the work done by the commission of scientists employed by the olive growers, showed that boiling the olives for forty minutes at a temperature of 240 degrees killed the bacilli.

Formal invitations were issued by the Council of the New York University and the faculty of the Veterinary School, to Alumni and friends of the school, to witness the formal opening of the new buildings of the New York State Veterinary College, 331 East 26th Street, New York City, Monday evening, December 13, 1920.

What Became of the Mule?

According to the daily press, Frank Pelone, a stable boss at Uniontown, Pa., found a stick of dynamite and put it in his hip pocket. Later, while working in the stable, he was kicked by a mule. The dynamite exploded, blowing Pelone to pieces and destroying the stable.

Anti-Roup Vaccine.

According to the Cincinnati *Times-Star*, experiments which have been carried out in Hamilton County, O., in the vaccination of chicken with anti-roup vaccine furnished by the Ohio State University, have shown encouraging results. The vaccine is injected under the wing joint, and costs about five cents per treatment. The university has just issued vaccine sufficient to treat 1,000 chickens.

Dr. B. R. Thayer of Morris, Ill., was married to Miss Ruby Meek, of Ottawa, Ill., on Dec. 16. It will be remembered that Dr. Thayer spent some time in service in France with the veterinary corps, and was commissioned a captain before the close of the war.

Dr. Michael McNalley, 86 years old, died recently at his home in St. Louis where he had resided for 37 years.

Cow Dies Giving Birth to Quadruplets.

A valuable Holstein cow, the property of Albert Bromene of Colma, Wis., died from impaction of the rumen while attempting to give birth to four well developed calves, each weighing forty pounds.

Two Cases of Tuberculosis in Wild Animals.

The author found a case of tuberculosis in a deer and also in a water fowl (fulica atra). In the deer, which was shot at a hunt, the cervical, bronchial, mediastinal, mesenteric, pelvic, portal and renal lymph-glands showed tubercular changes. In the abdominal cavity the mesentery showed tubercular changes. Tubercle bacilli were demonstrated both in sections and in smear preparations. Test inoculations and cultures made from the inoculated animals revealed all the characteristics of avian tuberculosis. The author is of the opinion that the deer was infected from tubercular pheasants. Tuberculosis in pheasants has been demonstrated. In the second case a water fowl from a lake near Stockholm revealed a rupture of the liver as the cause of death. Near the rupture a hazel-nut size tumor with central necrosis and caseation was found. In various other places (peritoneum, cecum, rectum) larger and smaller nodules were also present. The diagnosis of avian tuberculosis was made from histological examinations, also from test inoculations and cultures.

HILDING MAGNUSSON. Svensk Veter., 1919, p. 1.

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Cow-Test Associations Increase.

Cow-testing associations in the United States numbered 467 on June 30, 1920, according to a report just issued by the United States Department of Agriculture. This number represents a gain of 84 over the corresponding date of 1919. Bull associations increased during the same period from 78 to 120.

Dr. William Harrison, age 58 years, a graduate of the Ontario Veterinary College, died Dec. 26, at his home in Springfield, Mo, where he had been in practice for fifteen years.

Dr. B. L. Warwick of Aledo, Ill., was recently appointed assistant state veterinarian.

Dr. Clyde Baumgartner, who has been located at Spencerville, Ind., since the close of the war, during which he spent two years in the service overseas, has accepted a commission as first lieutenant in the veterinary corps of the army, and has been assigned to Camp Jackson, S. C.

Dr. E. E. Jones of Pleasantville, Ia., has gone to Artesian, South Dakota, where he has taken over a veterinary practice, and will make his home.

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Abortion and Wasting Disease in Goats.

The following article by L. E. Huddleson of the bacteriological section of the Michigan Agricultural College in the quarterly bulletin of that institution is of more than passing interest to veterinarians:

"The importation of goats into the state of Michigan for the purpose of clearing cut-over timber land brings to our attention problems of infectious diseases to which goats are susceptible and the matter of prevention and eradication of these diseases. Goats have been universally considered thrifty animals and peculiarly free from infectious diseases. For many years there has been a tendency toward inbreeding. This factor alone may play a considerable role in the lowering of their resistance thereby increasing their susceptibility to disease. The importation of goats into a climate which is entirely different from the climate to which they have been accustomed may also prove to be disastrous.

"Recently, there has been brought to our attention an enzootic in Angora goats in the northern part of the state. The disease appears to manifest itself by two separate and distinct symptoms, the casting of the developing kid prematurely and a wasting disease which always terminates fatally.

"The goats were shipped from the southwestern part of the United States and arrived in Michigan in the month of November in a partly starved condition. They were placed on a well-balanced ration of clover chaff, bean hay, silage and corn. They were quartered in a feed lot with 150 steers and 12 head of horses. Soon after their arrival, they began to cast their young prematurely at the rate of one to four a day for the flock of 169 goats. From the condition of the animals upon arrival, it would seem probable that the high rate of abortion was due to malnutrition. This factor is questioned; the animals were casting their young three months after arrival.

"Since infectious abortion is a prevalent disease in sheep and goats in Europe, it appeared possible that this flock of goats was infected with the same disease. Several fetuses were examined for the presence of the germ of infectious abortion more commonly found in cattle abortion. The findings in each case were negative. Since laboratory examination failed to reveal the presence of the germ of infectious abortion or the germ which was present in the goats showing symptoms of the wasting disease (which will presently be described), it may be possible that the change in climate under which the goats have been living plays an important role in the carrying of the fetus to full time by a pregnant ewe and should be avoided if offspring are desired.

"The wasting disease which was present in this flock of ewes is a serious problem. The disease has occurred locally in the states of Pennsylvania, Maryland, Wisconsin and in Michigan in years past. It has been given the name "Kakosis" or wasting disease. If once the disease appears in a flock of goats and proper sanitary measures are neglected, all susceptible goats will contract the disease and die. Other animals such as cattle, horses, hogs, sheep, and fowls do not appear to be susceptible to this disease.

"The disease usually takes a chronic course. The symptoms persist from two to eight weeks and are very suggestive of a worm invasion; there is at first noticed a great loss of flesh, general weakness, and diarrhea; the animal will shrink to about one-half normal weight before death; he appears to be free from desire and moves about slowly; there is

(*Continued on page* 89)

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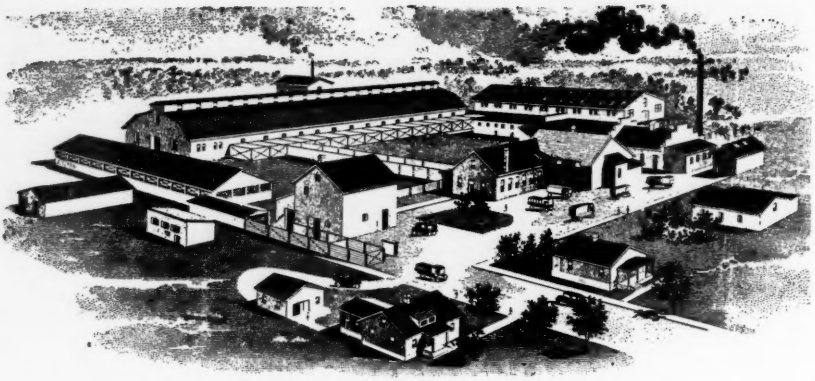

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drooping of the ears and a watery appearance of the eyes; no resistance is given when handled; when shoved, the animal falls to the ground and makes no effort to rise for some time; the appetite does not appear to be affected; bleating and coughing are occasionally noticed; the body temperature may range from 101 degrees F. to 104 degrees F., the visible mucous membranes appear pale in color.

"The cause of this disease is due to a small micrococcus, 'M. caprinus.' It has been fully described in a report by Mohler and Washburn. There is no remedial agent for treating affected animals, and since there is no hope for recovery they should be disposed of in such a way that other goats will not be infected. The most likely routes of infection are through the ingestion of infected material or by contact. Therefore, every precaution should be taken to prevent normal goats from coming in contact with infected material and with goats showing symptoms of this disease."

of milk and meat) in the conservation of proteins, fats, and carbohydrates and in the gathering and preparation of mineral elements and vitamines.

The following is contained in the report of the committee:

It has long been known, but perhaps never sufficiently emphasized, that the milk cow returns in the human food which she yields a very much larger share of the protein and energy of the food she consumes than does the beef animal. Dr. Armsby, probably the leading expert of this country on animal nutrition, has estimated that of the energy of grain used in feeding the animal there is recovered for human consumption about 18 percent in milk and only about 3½ percent in beef.*

*Science, Augt. 17, 1917.

Dr. V. C. Fretz, formerly connected with the United States Department of Agriculture and Animal Industry, but more recently of the Indiana state veterinary department, has taken over the practice of the late Dr. O. C. Whitestine at Huntington, Ind. The doctors were close friends, and, we are told, had been contemplating a partnership prior to the death of Dr. Whitestine.

Dr. M. Johnson, formerly of Heppner, Ore., has taken over the practice of Dr. J. Koch at Downey, Calif.

Dr. J. B. Crowell, formerly located at Marion, Ill., has recently established offices at Herrin, Ill.

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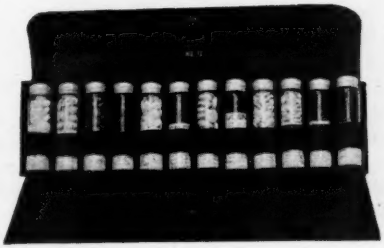

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Buffalo Herds Increase Rapidly.

The American Bison Society reports that in January, 1920, there were 3,393 wild and tame buffalo in the United States. This encouraging report sets at rest the very real fear that existed not long ago lest the native buffalo, which once roamed the western plains, would soon become extinct.

Of the nine government-owned herds, two of the largest under the care of the United States Department of Agriculture are located in the Wichita national game preserve, Oklahoma, and on the national bison range at Dixon, Mont. The herd on the Wichita preserve now numbers 154, including twenty-eight calves of this year. In this herd four bulls and twelve cows are ten years of age or over and one cow is twenty-nine years old. The fifteen animals that constituted the original Wichita herd came from the New York Zoological Park.

In accordance with the provisions made by the 1919 appropriation bill for their care, it is planned this year to dispose of some of the surplus buffalo in the government herds. Public parks and municipalties are the largest patrons. By distributing the animals over the country, if disease or misfortune overtakes the main herds, there still will be stock left with which groups could be built up again.

The buffalo in the United States have increased about 300 percent in twelve years. In 1908 there were 1,116 wild and tame buffalo in this country; at the beginning of 1920 there were 3,393. Canada has a larger number—5,080. This is due to the fact that several years ago, when the Pablo herd in Montana, belonging to Michel Pablo, a half-breed Indian, was for sale, the Canadian government bought the animals, sufficient interest not being exhibited by Americans at that time to make it possible to retain them in this country. The total number of wild and tame buffalo on the North American Continent at present is probably more than 9,000 head.

Important and Perplexing Diseases of Swine.

It is apparent that there are but few more important, or more perplexing problems of pathology and hygiene, confronting the veterinarians and live stock men, than the diagnosis, treatment and prevention of swine diseases. Losses have occurred one to eight months following immunization with serum and virus, that are difficult to explain. In many outbreaks the clinical symptoms and gross anatomical alterations observed at autopsy are indistinguishable from cholera, while the loss sustained has often been of such proportions as to constitute a most serious, economic factor. Many, but not all, of the obscure outbreaks upon laboratory examination have proved to be associated with hog cholera virus. As a result there is a growing conviction that "breaks" may be traceable to a variety of factors. The presence of hog cholera virus is one of the most serious factors, which if recognized in due time, can be checked by administering anti-hog cholera serum.

To mitigate the loss from cholera in treated or untreated herds a high grade, active immunity must be established. Experienced practitioners are employing liberal doses of virus (4-5 c.c.) regardless of the age or size of the animal with the hope of creating a stronger and more lasting immunity to cholera. The veterinary profession and the swine industry desire the benefit of your experience in using liberal doses of hog cholera virus. Have you found that a large or double dose of virus possesses any practical advantage or disadvantage? Some favorable claims have been made. Address the Animal Pathology Exchange, University of Illinois, Urbana, Illinois.

Thumps Due to Lack of Exercise.

Regarding an inquiry in the December journal from H. E., Colo., regarding thumps in pigs. Perhaps this is not his trouble, although we have thumps in fat young pigs, which is due entirely to lack of exercise and adiposity. In these cases exercise is all that is necessary.—A. B. S.

Thumps in swine is also very commonly due to infestation of the lungs with the larvae of the common round worm.—E. L. Q.

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"Everything for the Veterinarian"

Good Fellowship Evidenced at Galesburg.

The Mississippi Valley Veterinary Medical Association held its annual meeting at Galesburg, Ill., on January 14, 1921.

It was a splendid meeting, the oustanding feature of which was the good fellowship displayed. About fifty members were in attendance, also several visitors, among whom were Chief Veterinarian A. T. Peters, H. R. Schwarze, J. I. Gibson, field secretary of welfare work of the Illinois State Veterinary Medical Association, and E. L. Quitman, chairman; Roy E. Kluck, W. F. Brownlee, C. C. Hastings, T. J. Foster, Robert Rives, of the executive committee of welfare work.

The following papers were read and freely discussed: "Botulism in Cattle," by F. H. Burt; "Hemorrhagic Septicemia in Cattle," by F. C. Jones.

Dr. A. T. Peters gave a discourse on "So-called Cornstalk Disease." Dr. J. I. Gibson elucidated upon the work and object of the welfare committee and the duties and intentions of the field secretary.

The following officers were elected for the ensuing year: Dr. H. C. Reinhart, Rushville, Ill., president; J. H. Kritchel, Alexis, Ill., vice-president; W. L. Hollister, Avon, Ill., secretary.

Among other things for which the Mississippi Valley Veterinary Medical Association is noted is that the inception of the idea for "Veterinary Welfare Work" was born in the minds of some of its members and that its membership is responding nobly to the call for funds.

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Then we have recently got out another we call **our Fashion book,** wholly devoted to fashion plates of muffs, neckwear and other fine fur garments, with prices; also **fur garments remodeled and repaired.**

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Nebraska V. M. A. Holds Record Meeting

The meeting of the Nebraska Veterinary Medical Association held in Grand Island, Neb., December 15 and 16, was in many respects the most successful in its history, there being about two hundred in attendance. A worth-while deviation from the regular routine was a banquet the evening of the first day, the program for which was of general interest to live stock breeders in particular. Many representative breeders from different parts of the state were present and took an active part in the program. A short motion picture show was also put on. Two reels, one on hog cholera and the proper manner of vaccinating, and the other on tuberculosis in the dairy herd, were received with a great deal of interest and appreciation. The evening program was concluded with a dance.

Many members expressed themselves as having received much benefit from the clinic which was held during the afternoon of the first day. The only participant in this event from out of the state was Dr. G. H. Jungerman from Kansas City, who very ably demonstrated his methods of treating sterility in cattle and delivered a very instructive lecture in connection with his work.

An important part of the program was in the nature of a very exhaustive exhibit relating to bovine tuberculosis and a more limited one on hog cholera, by the Nebraska Bureau of Animal Industry of the State Department of Agriculture in co-operation with the local office of the U. S. Bureau of Animal Industry.

This exhibit consisted of fresh pathological specimens, permanent mounted specimens, and large pictures in colors and illustrated charts arranged on large easels. This exhibit was thrown open to the public. The high school and various local clubs were advised of this exhibit and a large number availed themselves of the opportunity to see it.

The entire second day was devoted to the presentation of papers and to discussions. By holding a clinic the first day it was possible to continue the program without interruption the second day, and was conducive to holding the members in attendance until the program was completed. This proved so satisfactory that we expect to continue the same plan next year. The Round Table method of handling subjects of general importance is proving more popular with us each year. The one conducted at this meeting by Dr. Kinsley on "Swine Practice," in which nearly everyone took part, was certainly well worth while.

Thirty-one new members were admitted. The following officers were elected: Dr. P. Phillipson, Holbrook, president; Dr. George A. Young, Syracuse, vice-president; Dr. Carl J. Norden, Lincoln, secretary-treasurer.

Omaha was selected for the next meeting.

Resolutions were adopted thanking the speakers from outside of the association who so kindly assisted in the program, the local committee, and the very generous manner in which the Grand Island Chamber of Commerce contributed toward making this meeting a success.

Resolutions were adopted as follows:

I.

WHEREAS, The present law which provides an appropriation for the payment of indemnity for tubercular cattle does not permit the payment of such indemnity for reactors unless such herds are under federal and state supervision for accreditization, and,

WHEREAS, It is our belief that it was not intended that this law should be so partial as to deprive the owners of dairy herds and others whose herds cannot be tested in the accredited plan from receiving indemnity for tubercular cattle found in their herds.

BE IT RESOLVED, That we, the Nebraska Veterinary Medical Association, in convention assembled recommend that proper steps be taken to provide a sufficient fund for the indemnifying of owners of cattle slaughtered by order of the state, as the result of being tuberculous, believing this to be a most important, fair and impartial step in the successful eradication of this disease."

Resolution Renewed.

This resolution was adopted by the Association in 1919 and renewed in 1920.

II.

WHEREAS, It is the opinion of the members of this Association that the interests of the live stock industry in the state can be best served by maintaining within the State Department of Agriculture, the Bureau of Animal Industry as now existing, the chief of which is a legally qualified veterinarian;

And whereas there is at present no legal provision on the statutes of this state for this Bureau;

BE IT RESOLVED, That the Nebraska Veterinary Medical Association recommend to the Governor that an effort be made to secure such legislation.

WHEREAS, The attention of this Association has been called to the improper and malicious use of tuberculin, for the purpose of doing what is known as "plugging," thus making accurate tests impossible and seriously interfering with progress in tuberculosis eradication work;

BE IT RESOLVED, By the Nebraska Veterinary Medical Association that action be taken to secure legislation granting the Nebraska Bureau of Animal Industry authority to regulate the sale and distribution of this product.

And be it further resolved that bills be drafted embodying these resolutions and presented.

And be it further resolved that the Nebraska Veterinary Medical Association be conferred with and practical bills be drafted embodying these resolutions to be introduced at the session of the legislature.

Since this meeting all three of these resolutions were adopted by the Nebraska Improved Live Stock Breeders' Association. Resolutions Nos. 1 and 3 were endorsed at the recent annual convention of the Nebraska Federation of Farm Bureaus. Governor McKelvie, in his message to the legislature, recommended that increased appropriation be made to make it possible to pay indemnity for all classes of cattle which react to the tuberculin test; also that the distribution, sale and administration of tuberculin be controlled.

These resolutions were introduced largely at the request of prominent breeders in the state, and from the attitude, as shown above, of other and more important associations in this state, we feel sure that they are along the right line and that they will in all probability be enacted in some form into laws during this session of our legislature. CARL J. NORDEN, Sec'y-Treas.

Manitoba Veterinarians To Have Meeting

The annual meeting of the Veterinary Association of Manitoba will be held February 15, at 10:00 A. M., in the Royal Alexandra Hotel, Winnipeg.

The following will address the meeting: Dr. F. Torrance, Veterinary Director General of Canada; Professor John Bracken, President of the Manitoba Agricultural College; Mayor J. A. Swanson, V. S., Manitou, "Purpura Haemorrhagica"; Dr. H. H. Ross, Brandon, "Abortion"; Dr. H. Colebourn, Winnipeg, "Bloodless Castration"; Mayor H. N. Thompson, V. S., Virden, "Joint Ill"; Dr. W. A. Harron, Beulah, "The Colt and Its Care From the Veterina-

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rian's Standpoint"; Dr. Harvey McEwen, Stonewall, "Digestive Disturbances Most Frequently Met With in Practice"; also an address by the President of the Association, Mayor J. A. Munn, V. S., Carman, Man.

J. B. STILL,
Secretary-Treasurer and Registrar.

Hog Problems, Post Graduate Courses, and Other News in the Far West.

Through the courteous invitation of Dr. C. M. Haring, of the University of California, in cooperation with the California State Veterinary Medical Association and Vice Dean E. E. Wegner and others members of the faculty of the Washington State Veterinary College in cooperation with the Washington & Oregon State Veterinary Medical Associations, the writer was privileged to visit the Pacific coast recently and partake in the veterinary short courses in the two institutions above named. The California Dairy Congress, under the efficient management of their secretary, Mr. Sam Greene, had arranged for a series of lectures and demonstrations for the purpose of stimulating the dairying industry in southern California, and the first step in my journey was at El Centro, which is located a few miles from the Mexican border in the Imperial Valley. This valley is destined to become one of the important dairying and hog raising centers, because alfalfa and other crops essential to these industries can be produced in abundance. At the present time there are relatively few cattle and swine in the valley, because the previous high price paid for cotton had extraordinarily stimulated cotton production and caused a consequent diminished production of stock and stock feeds.

From information that could be obtained, it was apparent that hog cholera was the most important disease of swine, although other infections had been identified by the veterinarians in practice in various parts of the valley.

Swine Diseases in Southern California.

From El Centro we journed to Los Angeles, where on December 31, 1920, the Southern California Veterinary Medical Association convened. An interesting swine clinic was held at Dr. Carr's hospital. From the clinical subjects and the discussions concerning the various cases presented, it was very evident that infectious necrotic enteritis is a common ailment of swine in southern California. By inquiry it was found that hog cholera, necrobacillosis, tuberculosis and other diseases of swine that are common in the central states also occur in swine in the coast section of southern California.

At the evening session of the association at Los Angeles, Dr. M. Dorset, of Washington, D. C., ably discussed the production and use of anti-hog cholera serum.

The Pasadena Rose Tournament.

Through the courtesy of Dr. Bushong, city veterinarian of Los Angeles, and Dr. Boucher, canine and feline specialist, of Pasadena, we were privileged to attend the Pasadena Rose Tournament and the Ohio-California football game on New Year's day. The rose tournament was without exception the most elaborate display of artistically arranged floral floats, depicting various cities, civic organizations and commercial enterprises, that the writer has been privileged to view. It is probably not generally known that Dr. Boucher is one of the principal directors of the rose tournament and has served as marshal of the day for several years. The rose tournament is an annual affair and is attended by thousands of people.

BUSINESS OPPORTUNITIES

For Sale, Exchange, Help Wanted, etc., $2 00 for 25 words or less; additional words 8 cents each. Send cash with order. Add 25c extra for correspondence when replies are sent in care of Veterinary Medicine.

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SERUM FACTORY—Moving to new location, will sell acreage, factory buildings, factory residence, private water and electric systems. U. S. Blackleg Serum Co., Oklahoma City, Okla.

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FOR TRADE—Practice established eight years, town of six hundred, one of richest communities in Northwest Iowa. Want Iowa practice, prefer large place. Good reason for trading. Give all details first letter. Address 568, care Veterinary Medicine.

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POSITIONS, LOCATIONS, ETC.

POSITION WANTED—1918 graduate McKillips Veterinary College, desires a location, partnership or position. Have had experience in general practice and worked as apprentice for a graduate Veterinarian, also govenment field work. Married and not afraid of work. References. Address No. 573, VETERINARY MEDICINE, Chicago.

POSITION WANTED—By graduate veterinarian, age 30; American. Experienced also as drug clerk. Experienced as a salesman and desire position in commercial lines where my art will be useful—selling to veterinarian, physician, etc. Prefer connection with veterinary manufacturer biologicals, etc., as salesman, etc., or in a business capacity. Good general education. Address 2671, care F. V. Kniest, Peters Trust Bldg., Omaha, Neb.

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POSITION WANTED—By graduate veterinarian, age 28, married; American, registered in Illinois—consider position in any state. Five years' general practice, three years' work in U. S. army, feel competent to fill position where veterinarian is wanted. Address 2657, care F. V. Kniest, Peters Trust Bldg., Omaha, Neb.

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University of California Practitioners' Course.

In company with a representative delegation of southern California veterinarians we proceeded to Davis, Cal., where is located the college farm of the University of California and where the veterinary short course was held. There were over 100 veterinarians registered and they were practically all in attendance continuously from January 3 to 7, inclusive. This course included the judging of cattle, sheep and swine; feeding problems, diseases of swine, anti-hog cholera serum and its use, bovine tuberculosis, abortion, sterility, mammitis, rabies, botulism, anesthesia and other topics of interest. Practically every veterinarian, regardless of his specific professional activity, was interested, because some phase of every veterinary problem was discussed.

California Veterinarians Maintain High Standard.

The veterinarians in California and nearby states have had an excellent opportunity for maintaining their standard by the privileges offered in the annual short course, and the California State Veterinary Medical Association and the University of California should be congratulated for their splendid co-operation and the opportunity they have provided for their fellow veterinarians, and it would seem fitting for some other states to arrange similar courses.

According to the discussions, the swine problems in the various sections of California are very similar to those in the central states. Some limited outbreaks of cholera occur, but have been successfully controlled by the judicious use of serum and virus combined with the enforcement of pr per sanitary regulations. Infectious necrotic enteritis is relatively common, and after careful autopsy of cases presented for demonstration purposes during the short course, we are of the opinion that the disease is identical with infectious necrotic enteritis in the central states.

The Practitioners' Course at Pullman.

The trip from Davis, Cal., to Pullman, Wash., was of interest and we partook heartily of the Shasta Springs water and viewed with pleasure Mt. Shasta covered with its robe of snow. We traveled the north bank of the Columbia river from Portland and had a splendid view of Mount Hood and the famous Hood River Valley, and commend this trip for those who enjoy scenery.

(*Continued on page* 104.)

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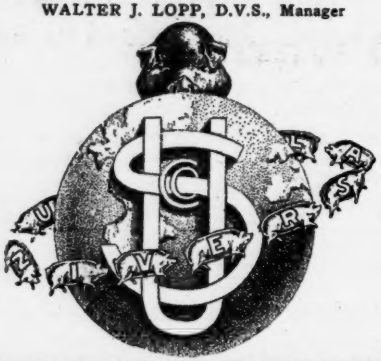

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"THE PIONEERS"

There were about thirty veterinarians who attended the post-graduate course in Pullman from January 10 to 14, inclusive. Veterinarians from Washington, Oregon, Idaho, Montana and British Columbia were among those registered. Various diseases of horses, cattle, sheep, swine and poultry were discussed and various equine and bovine surgical operations were demonstrated. Deficiency diseases were extensively discussed and were of particular interest to the writer, probably because those diseases are not of common occurrence in the central states.

Dr. B. T. Symms gave a comprehensive demonstration of the manipulation of the female bovine genital organs in relieving sterility. He stated that he was conducting some experiments in eliminating abortion in cattle by removing all heifers and cows that give a positive serologic reaction. The outcome of these experiments will be of considerable interest and we hope that the doctor will publish his findings in VETERINARY MEDICINE from time to time.

A Mystifying Disease of Swine.

The most interesting condition in swine in the northwestern states was reported by Dr. L. C. Pelton, state veterinarian of Washington. Various practitioners, especially of the coast region of Washington and Oregon, discussed various phases of the disease reported by Dr. Pelton. According to the reports and discussions, it appears as though the first symptom of this disease is a profuse diarrhea. The affected hog refuses to eat; there is rapid emaciation; there may or may not be a rise of temperature. This disease occurs in swine that have been given the anti-hog cholera serum and virus. It may develop in swine that have been recently immunized or in swine that have been immunized three months or more. It also occurs in swine that have not been immunized. It is probably more prevalent in garbage-fed swine, although it occurs in swine fed grain. The disease is apparently not transmissible, as affected swine have been placed in lots without the transmission of the disease to other swine. The lesions as described consist of petechial hemorrhages in the submucosa of the intestine and beneath serous membranes. There may be tumefaction and slight congestion of the mesenteric glands.

In some cases that have died of the malady no lesions were demonstrable. The writer may have made some slight errors in recording the symptoms and lesions of this disease. It would appear that the disease is due to some defect in the feed, and it is probable that we will be priviliged with a report in VETERINARY MEDICINE concerning the malady by Dr. Pelton or some of his associates in the near future.

Neglected Opportunities.

We believe that the opportunity for producing swine in the northwestern states have not been fully realized. There are some sections that produce wheat only, and other sections that devote their entire energy to fruit growing; but the successful agriculturist, we believe, is the man who produces some live stock, including swine, regardless of his location.

The post-graduate course at Pullman, we believe, was a success, for practically every man attended both the day and the night sessions, and those in attendance commented very favorably upon such a course and expressed a keen desire for the arrangement of such a course each year.

The writer wishes to thank each and every individual who had to do with the arrangements of programs and entertainment provided while en route and during the sessions of the courses above described. A. T. KINSLEY.

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